AMATEUR RADIO

AUGUST 1947

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— IN THIS ISSUE —

EDITORIAL

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A recent announcement by the Postmaster General, Senator Cameron, has indicated to Amateurs that their Services during the war were appreciated and recognised in official quarters.

At the same time it was announced that the regulations governing Radio Amateurs were under revision and would permit many Amateur Stations to increase their power, to use frequency modulation and pulse transmission. The Postmaster General thus made public some of the important changes to existing regulations which have been under discussion between the Radio Inspector's Department and the Wireless Institute of Australia during the past twelve months.

It is a fact that the cordial relations existing between the Radio Inspector's Department and Amateurs generally has been developed as a result of a keen desire to improve and widen the knowledge of the radio art by both parties.

It is also a fact that Officers of the Radio Inspector's Department have shown a deep personal interest in the administration of the regulations governing Amateurs, in ways best calculated to encourage the development of technical knowledge and experimentation, thus enhancing the national value of a section of the community whose knowledge has, and can be, extremely valuable in these days of scientific warfare and electronic development.

Naturally in the post war period of changing conditions, international telecommunication conferences, new methods of communications etc., it is not difficult to understand why new regulations must be carefully considered before promulgation.

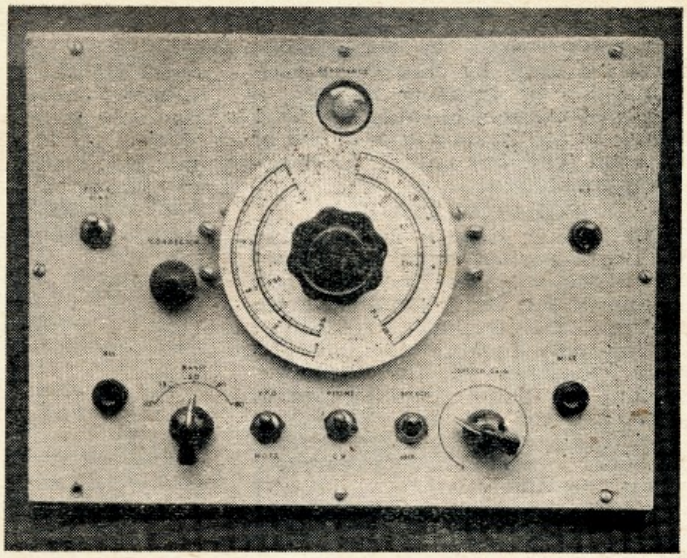
It is the more difficult therefore to understand why various individual Amateurs have made approaches to Parliamentarians, to seek their aid in obtaining permission to use additional methods of communication and increased power, when such facilities were in process of being granted by the Postmaster General's Department.

Such approaches, however well intentioned, do nothing to strengthen and maintain the satisfactory relations which have always existed between the authorities concerned with the administration of Amateur affairs and the Amateur's representatives.

W.R.G.

A VARIABLE FREQUENCY OSCILLATOR

By J. C. DUNCAN, VK3VZ*



Intelligently used, a v.f.o. can be the means of reducing QRM on our bands, and increasing your operating pleasure. Thoughtlessly used, it will increase QRM and bring down wrath on you and your station from all fair minded Amateurs. The category into which you are placed by your fellow Amateurs will depend on you.

Since our return to the air, it has become more and more evident that the QRM situation is very much worse than pre-war.

It was felt therefore that if a flexible method of frequency control were used, quite a lot of the QRM on the radiated signal could be eliminated. This has since proved to be the case, and a reduction of 80% in reports of QRM have been experienced at this station, since the v.f.o. has been in operation.

Quite a large proportion of amateurs are wary of v.f.o., because they fear out of band operation, and therefore it was considered a necessity that a built in crystal check circuit be available. The following specification was drawn up, and after three months of spare time experimenting, a unit which satisfied all these requirements was evolved.

The v.f.o. must have:—

1—Complete isolation of the oscillator from output circuit loading.
2—Stabilisation against line and plate voltage variations.
3—Satisfactory keying of the oscillator without clicks or chirps, for break-in operation.
4—Built-in crystal check circuit.
5—Compensation against changes in frequency due to temperature variations.
6—V.F.O. note available in the receiver, **without radiation from the transmitter**, for netting and choosing the operating point in the band.
7—Mechanical stability.
8—Dial accurately calibrated, directly in frequency, for all bands to be used.
9—Unit small, self-contained, with own power supply, and located on operating desk.
10—Switches on unit to relay-control operation of the transmitter.
11—Three stage speech amplifier with 600 ohm output, suitable for input to a driver stage for class "B" modulators.

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Provision has been made for item 11, but as this amplifier is not required with the present transmitter, it will be wired at a later date.

The circuit diagram is shown in Figure 1.

OSCILLATOR CIRCUIT

The oscillator circuit is entirely conventional in design, and operated originally on 160 metres, but tests showed that results were just as good when used on 80 metres, and as more amateurs are in possession of 80 metre crystals (for the resonator circuit), it was felt that this frequency would be of more use generally. However coil data is given for both bands.

The oscillator is very high "C," the total capacity being in the region of 850 pfds., this reduces the effects of tube interelectrode capacity changes to a very small amount, during the initial warming up period.

With such large amounts of capacity, changes of frequency with rising temperatures, becomes an important factor in the stability of this oscillator, and therefore portion of the lumped capacity in the circuit is made up of a negative co-efficient condenser. The method of temperature compensation is discussed later. The screen and plate of the oscillator are supplied from a voltage regulator type VR150/30, the screen having no dropping resistor with this low plate voltage.

Keying in the screen lead has been most effective, without any trace of chirps, and nearly all reports on c.w. are T9X. Clean keying is mainly due to the following points. (1) Voltage stabilisation of the oscillator. (2) Voltage regulation (entirely separate to item (1) and discussed later). (3) Use of an isolator following the oscillator. (4) Screen keying. (5) Small values of screen and plate bypasses.

The one disadvantage of screen keying is the high voltage on the key, however a relay could be used here if desired.

ELECTRON EYE, CRYSTAL RESONATOR CIRCUIT

An electron eye, crystal resonator circuit is used, and at the resonant frequency of the crystal the shadow angle of the eye increases sharply as the v.f.o. is tuned through this point. This circuit can be used with two crystals connected in parallel, and indication of resonance will be obtained with both, however the sensitivity of the eye is decreased with the circuit values given here, and it may be necessary to experiment with resistance values to obtain a good indication with two crystals. This would enable two band-edge crystals to be used, an obvious advantage. However one crystal located in the frequency range of the oscillator is all that is necessary, and in practice a small red line is drawn on the dial calibrations at the crystal resonance. The v.f.o. dial is set to this red line, and the small correction condenser adjusted to give maximum opening of the eye.

This electron eye circuit is used in the SCR274N aircraft transmitter, and its operation is as follows: The triode section of the 6U5G acts as a "biassed detector" and at the resonant frequency of the crystal, draws plate current, causing an increase in the voltage drop between target and plate, thereby increasing the shadow angle of the eye.

A tap is taken from the e.c.o. coil one turn from the cold end, and after passing through the 50,000 ohm isolating resistor, connects to the electron eye grid. The crystal is connected from this point to earth. The isolating resistor is fairly critical and should be of such value that there is no pulling of the v.f.o. when approaching the crystal frequency. The cathode resistor controls the off resonance shadow angle of the eye, large values decreasing this angle. The sensitivity of the eye, i.e. the opening of the eye on resonance is controlled by the 1 meg. and 0.5 meg. plate resistors, large values making the eye more sensitive. If two crystals on the band

edges are used, by choosing a suitable value of isolating resistor, it should be possible to cause the v.f.o. to lock to the crystals at each end of the band with this circuit, an interesting possibility.

ISOLATOR STAGE

The isolator stage is untuned and has two important functions. Firstly it prevents changes in tuning and loading of the buffer amplifier from effecting the oscillator frequency, and secondly because the interelectrode capacities of the oscillator, isolator and buffer amplifier are in series between the two tuned circuits, it is possible to use a tube in the buffer amplifier having relatively poor grid-plate isolation.

A 5,000 ohm plate resistor is used in the isolator output circuit, to avoid any possibility of resonance with the r.f. choke in the oscillator plate circuit. This happened in the original circuit, and substituting the resistor cured the oscillation, and did not decrease the output of the unit.

BUFFER AMPLIFIER

The buffer amplifier is conventional except for the output tank circuit which is slug tuned over its full range with only a slight falling off of output at each end. Output is through a co-ax connector to the transmitter.

A 6V6G can be used in this stage with a slight increase in output, but a 6F6 was chosen because of its better grid-plate isolation. The output tank consists of 80 turns of 35 s.w.g. enamelled wire wound on a $\frac{7}{8}$" Polystyrene former, with a $\frac{3}{8}$" brass disk tuning slug mounted so that it screws into the centre of the coil. The secondary winding is 7 turns of 29 s.w.g. enamel wound 1/16" below the primary winding.

POWER SUPPLY

The power supply is entirely conventional and needs few comments. It is necessary to use two sections of filtering to obtain a pure crystal note from the oscillator, and also the values of isolator and buffer amplifier screen and cathode resistors were chosen so that, under key up and key down conditions, an almost constant current is drawn from the power supply, in this case the variation is 3 Ma. With an output of 275 volts from the power supply the currents drawn by the three stages are: oscillator 8 Ma., isolator 10 Ma., and buffer amplifier 30 Ma. The voltage regulator takes 22 Ma., and 30 Ma., key down and key up respectively.

CONTROL CIRCUITS

The transmitter is relay controlled and to change from send to receive on phone it is only necessary to throw the send-receive switch on the receiver. The relays used are the type commonly available from disposals, having a 75 ohm coil and d.p.d.t. and d.p.s.t. contacts. They are powered from a supply consisting of a step down transformer, and a 12 volt 1.5 amp. dry metal rectifier. This supply is simple, needs no attention and will operate up to 10 relays if required. The toggle switches on the v.f.o. are manufactured in Sydney, and have four connecting lugs each end. The control circuits are operated as follows:—

Filaments and Bias Switch closes primaries of filament and bias supplies in transmitter, also powers time delay relay in h.t. primary, and a.c. to v.f.o.

H.T. Switch supplies a.c. to h.t. primary, if h.t. time delay has already closed.

Phone-C.W. Switch connects relay contacts of relay in v.f.o. into circuit. This relay is connected to operate from send receive switch on receiver. In phone position, the relay contacts are connected, one pair of contacts closes screen of oscillator and as the transmitter is biased to cut off, gives r.f. output, and second pair of relay contacts closes modulator relay in transmitter. With toggle switch in c.w. position, relay contacts are disconnected, and keying is done from key jack on v.f.o.

V.F.O. Note Switch. In the on position, one pair of switch contacts closes the screen of the oscillator, and second pair of contacts opens the buffer amplifier cathode. With voltage stabilisation and voltage regulation, there is no change in oscillator frequency with the rise in power supply voltage. The v.f.o. note is then of sufficient signal level in the receiver to make netting or selection of a clear spot in the band quite easy.

CONSTRUCTION

The unit is built on a 10" wide x $10\frac{1}{2}$" deep x 3" chassis, with a $11\frac{1}{4}$" x $8\frac{1}{2}$" front panel, and enclosed in a $11\frac{3}{8}$" wide x 11" deep x $9\frac{1}{8}$" high metal case. There are three outlets at the rear of the chassis for mains, r.f. co-axial, and a twelve pin connector for the relay circuits. The oscillator and isolator, complete with associate components, are mounted on a $6\frac{1}{2}$" x $6\frac{1}{2}$" x $\frac{1}{8}$" dural, or hard aluminium plate, which is mounted by three rubber grommets to the chassis. The main condenser and corrector condenser shafts protrude through the front panel and care must be taken to see that these shafts do not touch the front panel, so fairly large holes are cut to avoid this.

The main tuning condenser C1 is a double spaced job and has 11 plates, the two outer rotor plates were removed, giving the oscillator 3.5-3.61 Mc. coverage on the fundamental range. This condenser is a disposal job and originally had a spring loaded gear train on the front. The gear train was removed and a 3 : 1 planetary reduction drive (also disposals) substituted. By removing the old fashioned bakelite knob on the reduction drive, the back flange which had holes for two mounting screws, was exposed and a celluloid dial fitted as shown in the illustration. It can be seen therefore that the main condenser, reduction gear and celluloid dial are mounted on the rubber mounted dural plate, and do not contact the front panel at any point.

The small corrector condenser C2, mounted on a small angle and located to the left of the main condenser, is a 4 plate double spaced disposals job. Behind these two condensers is a strip of Polystyrene $5\frac{3}{8}$" long x 2" wide x $\frac{1}{4}$" thick mounted on four $\frac{3}{8}$" high pillars. This strip carries the main trimmer condenser C3, coil former, crystal, resistors and condensers for the oscillator. The oscillator and isolator valve sockets are mounted near the rear edge of the mounting plate and are also on $\frac{3}{8}$" high pillars.

All wiring for these two stages is done in 18 gauge tinned copper wire, with spaghetti sleeving where necessary. A strip of Polystyrene $5\frac{3}{8}$" long x 15/16" high x $\frac{1}{4}$" thick is mounted on the rear edge and drilled to take the connections from power supply, etc. Two covers shield this section, a small one covering the oscillator and isolator sockets, shown in position in the illustration, and a larger cover, which covers the remaining components on the dural plate.

The 6U5G is mounted horizontally on top of this second cover and takes its grid input from the terminal strip, and its other connections from under the chassis of the main unit. Visible in the illustration is the white negative co-efficient Ceramicon which compensates against temperature drift, and is located in front of the main trimmer.

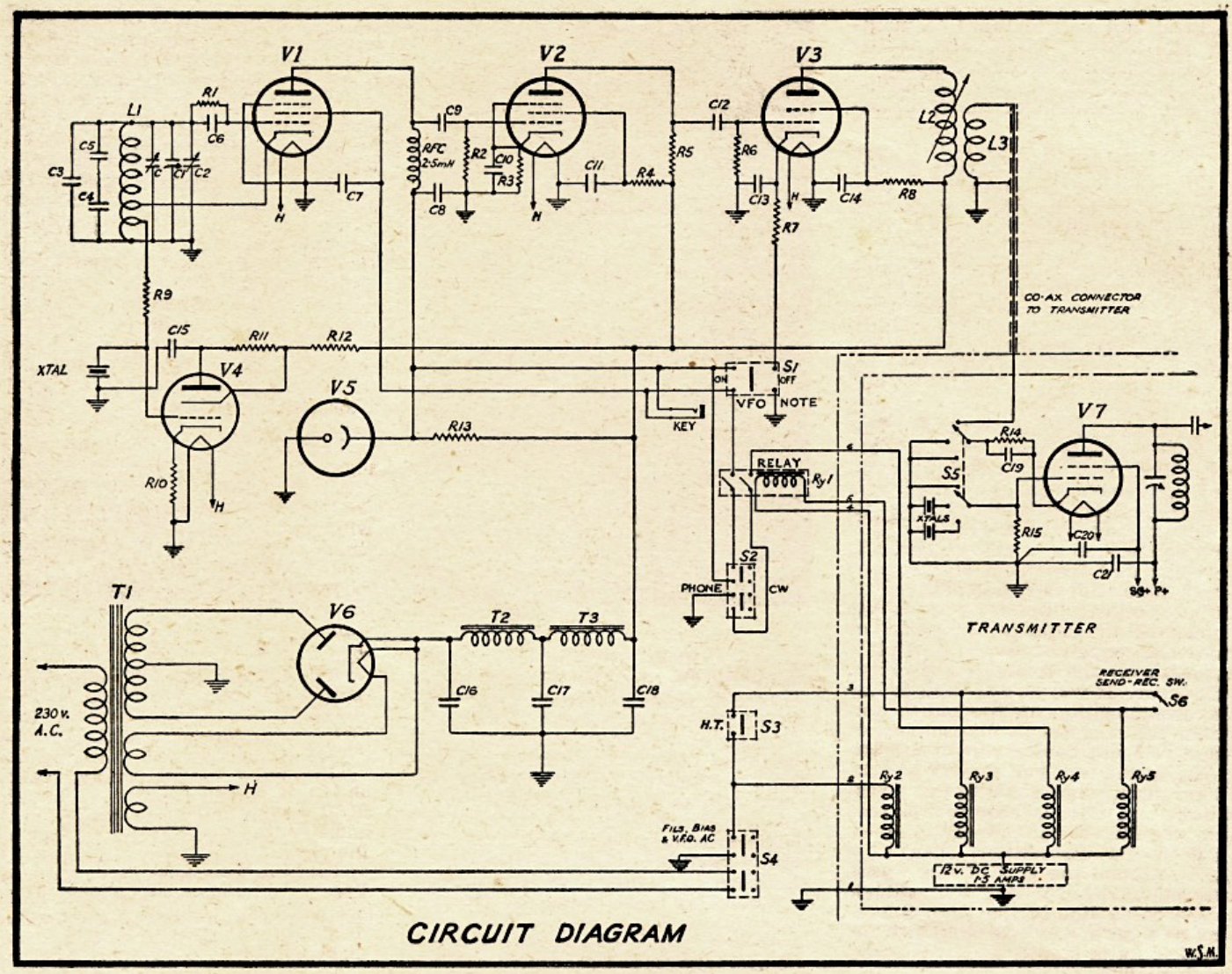
Across the chassis from left to right is the power transformer, rectifier, buffer output tank in its shield, with the buffer amplifier immediately in front, and the VR150/30 regulator at the extreme right. The three valve sockets on the right hand side are for the three stage pre-amp not yet wired.

The front illustration shows: top left, filaments and bias switch, corrector dial, main dial, and h.t. switch at the top right hand corner. Bottom row, key jack, automatic band switch (to be attempted later), v.f.o. note switch, phone-c.w. switch, speech amp. h.t. switch, speech gain control, and microphone jack. The filter chokes and send-receive relay are mounted under the chassis, the relay being rubber mounted.

Flexible earthing leads connect the dural plate carrying the first two stages to the main chassis, to ensure adequate ground.

ADJUSTMENT

After wiring and testing, comes the all-important and generally neglected point of adjustment. First check the



CIRCUIT DIAGRAM

C1, C2—See text.
C—5-100 pfd. Hammuland trimmer.
C3—750 pfd. Simplex mica.
C4—100 pfd. N750 Ducon Ceramicon.
C5—200 pfd. Simplex mica padder (80 metre coil only).
C6—50 pfd. silvered mica.
C7—.002 mfd. mica.
C8—.0003 mfd. mica.
C9, C12—100 pfd. mica.
C10, 11, 13, 14, 15, 19, 20, 21—.01 mfd. mica.
C16, 17, 18—8 mfd. electrolytic.
R1, 9, 15—50,000 ohms.
R2, 4, 6—100,000 ohms.
R3, 7—250 ohms.
R5—5,000 ohms.
R8—40,000 ohms.
R10—10,000 ohms.
R11—1 megohm.
R12—500,000 ohms.
R14—250 ohms.
R13—5,000 ohms, 20 watt.
S1—d.p.d.t. toggle switch.
S2, 4—Four way d.t. toggles.
S3, 6—s.p.s.t. toggles.
S5—Three position 2-pole rotary.
T1—Power transformer 300-0-300 v., 100 Ma., with 5 v. and 6.3 v. filament windings.
T2, 3—Filter chokes, 30 h., 100 Ma.
Ry1—d.p.s.t. d.c. 75 ohm relay.
Ry2—Filament and bias supply d.c. relay.
Ry3—h.t. supply d.c. relay.
Ry4—Mod. supply d.c. relay.
Ry5—Antenna relay.
V1, 2—6SK7.
V3—6F6.
V4—6U5G.
V5—VR150/30.
V6—5V4G.
V7—6V6G.
L1—160 metre coil: 27½ turns 24 t.p.i., 25 b. and s. enamel, ⅞" diam. Polystyrene, cathode tap 8 turns, xtal resonator tap 1 turn. 80 metre coil: 12½ turns 14 t.p.i. 20 s.w.g. tinned, ⅞" diam. Polystyrene, cathode tap 4 turns, xtal resonator tap 1 turn.
L2—80 turns closewound 35 s.w.g. enamel, ⅞" diam. Polystyrene.
L3—7 turns closewound 29 b. and s. enamel, spaced 1/16" below L2.

oscillator for covering the band and also check to see the electron eye is functioning correctly—the eye should be almost closed off resonance, and open to almost 90° at resonance.

Voltage stabilisation of the Oscillator.—Remove the VR150 regulator and connect a 10,000 ohm resistor in the common plate and screen h.t. lead to the oscillator. Wire a switch across this resistance. Close the switch so that the resistor is out of circuit. Now with b.f.o. on the receiver in operation, zero beat to the e.c.o. output. Open the toggle switch across the resistor and retune the receiver to zero beat, noting whether the e.c.o. went higher or lower in frequency with a drop in h.t. voltage. If the frequency increased the cathode tap on the oscillator is **too high.** If it has **decreased** in frequency the cathode tap is **too low.** Adjust the cathode tap accordingly until no audible change in beat note occurs.

With this simple method of voltage stabilisation the oscillator is made immune from frequency changes due to voltage variations up to 100 volts change. The voltage regulator was

on hand and was included to maintain the voltage at 150 volts, to enable the screen and plate supplies to be tied together, without exceeding the safe dissipation of the 6SK7 oscillator.

The oscillator coil which is wound on a $\frac{5}{8}$" diameter Polystyrene former should now be rewound with permanently connected taps, as altering cathode taps whilst adjusting mutilates the coil. The final winding was on a former threaded 14 turns per inch, consisting of 12½ turns of No. 22 gauge tinned copper wire. Where taps are required, at one turn, and approximately 4 turns, from the cold end of the coil, the wire is formed into a loop as shown in the small inset in Figure 1, and bound at the neck of the loop with a strand of tinned copper wire from a piece of Belden. This loop is then soldered and flattened on an anvil making a nice solder lug to solder the tap to.

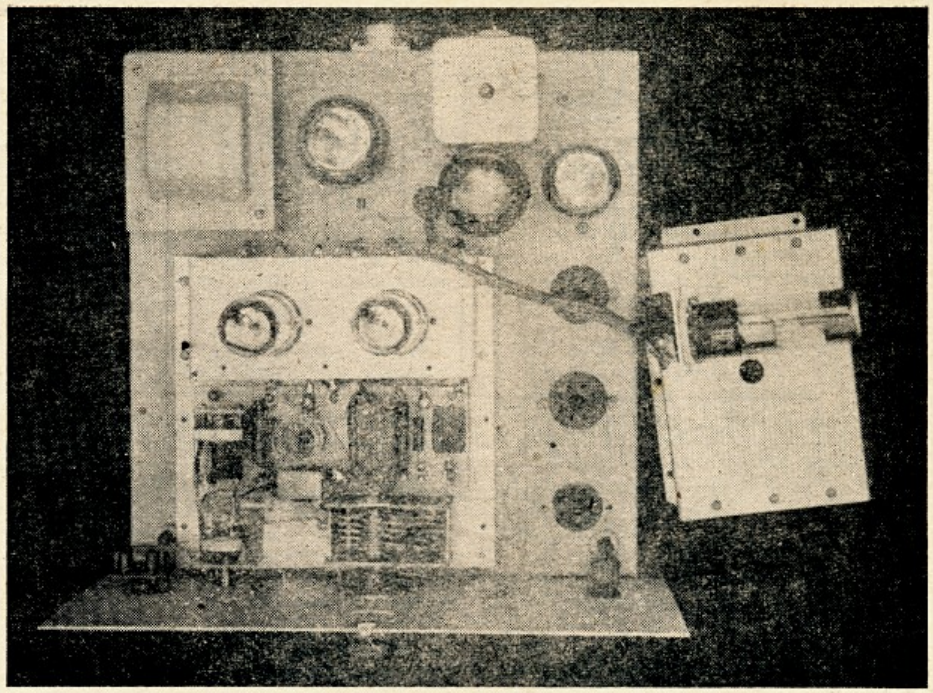
The keying of the oscillator can now be checked and will be found to be clean and free from chirps, provided the circuit has been adhered to. Do not connect the isolator to the output of the voltage regulator, or raise the values of screen and plate bypasses on the oscillator, or chirps will occur. If you do not wish to key the oscillator, key in the buffer amplifier cathode, not in the isolator, or again you will have a chirpy note.

The whole unit can now be checked for output and drive to the transmitter, and if it is required to feed into an 80 metre crystal oscillator tube in the transmitter, such as a 6V6G, ground the grid of the crystal oscillator, and connect the cathode to the co-ax line of the v.f.o. Operating as a grounded grid amplifier the 6V6G is quite stable, and will easily drive an 807.

Temperature compensation is commenced now and use is made of the new Ceramicons made by Ducon. These condensers are white in colour, and resemble a resistor in appearance. The dielectric is a ceramic with the plates of silver, and by varying the degree of titanium dioxide, these condensers can be made to either increase or decrease in capacity with a rise in temperature. The negative co-efficient condensers have, in addition to the capacity, the designation N750, indicating that a reduction in capacity of 750 parts in one million will occur as the temperature of the condenser increases. These condensers also have a small green dot on one end. The zero co-efficient Ceramicons have N.P.O. and a black dot.

The method of temperature compensation is as follows:—

Firstly, the total lumped capacity of the oscillator is made up of ordinary mica condensers. The v.f.o. is then put in its case and switched on. After allowing about five minutes initial warm-up, to allow the oscillator tube to attain operating temperature, the v.f.o. is tuned to the crystal frequency, indicated by maximum opening of the eye. After running for about fifteen minutes, it will be found the eye has closed, so carefully retune the main dial to resonance, noting whether the main tuning condenser has to be increased or decreased in capacity, it will most certainly need decreasing, indicating an increase in capacity with a rise in temperature somewhere in the circuit. Connect the 100 pfd. N750 Ceramicon in circuit and remove 100 pfd. of ordinary mica condensers and try again. It will probably be found that the main condenser will need to be increased in capacity, indicating over compensation. Smaller values of Ceramicons should be used until exact compensation is attained. In the writer's case values under 100 pfd. were not obtainable, so it was necessary to introduce a series padder of ordinary mica, and by varying the value of this padder exact temperature compensation was obtained.



CALIBRATION

The celluloid dial is rubbed with fine glass paper to make it suitable for Indian ink, and two small holes are pricked in the two celluloid cursors. It is here that a 100 Kc. oscillator and 10 Kc. multi-vibrator is required. If you have an alignment oscillator which will cover 100 Kc. it will only be necessary to connect the multi-vibrator and an untuned output amplifier.

Alternatively an alignment oscillator on 500 Kc. and two multi-vibrators on 100 Kc. and 10 Kc. are needed, but unfortunately it is necessary to have, or make, a unit of this kind to calibrate successfully.

The 500 Kc. or 100 Kc. oscillator is tuned to zero beat with WWV on 5, 10 or 15 Mc., and resistor values of the multi-vibrator varied by means by the potentiometer until the beats between the 100 Kc. points are correct, that is nine points in between. The receiver is now tuned to the beat indicating exactly 7.2 Mc. and with the receiver b.f.o. on, the v.f.o. is tuned to zero beat also. Next tune the receiver to the beat note indicating 7.19 Mc., and again tune v.f.o. to zero beat, pointing the dial through the hole in the cursors at each step, and so on, until the range 7-7.2 Mc. is covered. The 3.5 and 7 Mc. scales will now have 5 Kc. and 10 Kc. points, respectively. Start again with the receiver at 14.4 Mc. and mark points every 10 Kc. from 14 to 14.4 Mc., at the same time marking the 28 Mc. scale, which will give 20 Kc. divisions. The dial is now inked in and figured, thereby completing the calibrations.

NOTE THESE POINTS

During the building and experimental work on this v.f.o., several faults occurred, which resulted in the note of the oscillator being unstable, and are noted here to illustrate the care that is necessary in building a unit of this kind.

(1) Reduction drive of main condenser touching the front panel. This trouble was eliminated by enlarging the hole in the front panel, and putting additional earth straps from the dural plate to the chassis, thereby bringing these parts to the same earth potential.

(2) Loosening the screws holding the rear cover plate over the oscillator and isolator sockets, caused in-

(Continued on Page 23)

W.I.A. 1947 INTERNATIONAL DX CONTEST

R. H. CUNNINGHAM, VK3ML,

The 1947 Federal Convention of the W.I.A. directed the Federal Executive to organise and conduct a 1947 International DX Contest to be held over the four week-ends in October.

The co-operation of amateurs throughout the world is sought through their respective Radio Societies to ensure that the contest is successful not only from the stand point of VK stations but as a means of providing an interesting series of week ends for overseas stations.

This contest is similar in nature to those previously held and which were very familiar to the pre-war gang with the exception that allowance has been made this year for single band operation in addition to the "open" all band trials.

Both the open and single band sections are subject to awards and participants are only asked to endorse their logs with the particular section they are contesting.

It hardly seems necessary to have to explain the formulation of serial numbers, but, without this knowledge, some few Hams might miss the enjoyment of the contest, so here is a brief resume of the method. Each participating station allots himself three figures, anything between 111 and 999. These figures form half the six-figure serial number that he hands over to the station he contacts. The other half, at the first QSO, consists of three noughts, 000. Therefore, for example, 453,000 may be a station's number that he passes on to his first contact. In exchange he will receive a similar number, say, 687,989, which shows that that station has worked another station before, because the three 000s have been substituted by 989. The second half of the six-figure serial number is taken from the first three figures of the number received at the previous QSO, and is added on to a station's own three figures. Then this combination is given to the next contact, and so on throughout the test. Always retaining the first three figures, adding the second and transmitting them in that order.

The Executive of the W.I.A. invite amateurs all over the world to participate in this contest and can guarantee you some thrills—especially as the V.H.Fs. should be opening-up around this time of the year!

RULES AND CONDITIONS

1. There shall be three contests:—
   (a) Transmitting c.w.
   (b) Transmitting phone.
   (c) Receiving.

2. Contestants may compete in the "open" events, that is, on all licenced amateur bands, or in any one or more individual bands by submitting a log for each band. There shall be awards for the "open" as well as for the winners of each band.

3. The Wireless Institute of Australia Contest Committee shall be the sole adjudicators, and their rulings will be binding in the case of dispute.

4. The nature of the contest requires the world to contact all States of VK.

5. The contest is to be held from 0001 E.S.T. Saturday, 4th October, till 2359 E.S.T. Sunday, 5th October (from 1401 G.M.T. 3rd October, till 1359 G.M.T. 5th October) and will continue over the following three week-ends in October at the same times.

6. The first two week-ends are to be devoted to PHONE operation

whilst the latter two for C.W. The receiving contest is open at all times and incorporates both phone and c.w. reception.

7. The contest is open to all licenced transmitting amateurs and receiving stations in any part of the world. Unlicenced ship and expedition stations are not permitted to enter the contest. Financial members of the W.I.A. and its affiliated societies only will be eligible for awards in VK.

8. Only one licenced station is permitted to operate any one station under the owner's call sign. Should two or more operators operate any particular station, each will be considered a competitor and must enter his own call sign and submit, in his log, the contacts established by him. This debars persons from entering who have not a HAM licence.

9. Each entry must be signed by each competitor as a declaration of the above statement.

10. Each participant will assign himself a serial number of three figures, as detailed in the contest description. When two or more operators work the one station, each will assign himself a separate number.

11. All amateur frequency bands will be used.

12. Only one contact with a specific station on each of the bands during each week-end will be permitted.

13. Contacts may be repeated on each of the succeeding week-ends with the same stations in accordance with Rule 12.

14. Each contact must be accompanied with an exchange of serial numbers and signal strength reports, including readability, strength and tone.

15. The judges reserve the right to disqualify any station whose tone report is consistently less than T8.

16. Scoring. Three points will be allotted for every contact completed with an exchange of serial numbers and signal reports.

17. VK stations will multiply their total score by the number of countries worked on each band and stations outside Australia by the number of Districts worked on each band in Australia; there being eight in all: VK2, 3, 4, 5, 6, 7, 8, and 9. The onus of establishing the identity of new countries will rest with the participants.

18. No prior entry need be made for the contest, but each contestant is to submit a log at the conclusion of the test showing: date, time (in G.M.T.), band, station worked, in and out serial numbers, in and out signal strength reports, and points claimed for each QSO. Finally a summary of points and multipliers claimed must be shown at the conclusion of the log.

19. Entries from VK stations must reach the W.I.A., 191 Queen Street, Melbourne, C.1, Victoria, Australia, not later than 14 days after the conclusion of the contest and overseas logs should reach that address by 31st December, 1947.

20. Awards. Attractive certificates will be awarded to the station returning the highest total in each State of each participating Country. Special prizes, donated by our advertisers, will be awarded, in addition to certificates, to section winners in Australia. There will be no world winner.

21. Overseas stations should call CQ VK, and VK stations CQ DX TEST. It is especially requested that c.w. stations refrain from operating during the phone contest and likewise, the phone stations QRT during the c.w. trials.

RECEIVING

1. The rules for the receiving contest are the same as for the transmitting contest, but is open to members of any Short Wave Listeners' Society in the world. No transmitting station is allowed to compete in the receiving contest too.

2. Only one operator is permitted to operate only one receiver.

3. The dates, scoring of points, and logging of stations once on each band per week-end are subject to the same rules as for the transmitting contest.

4. To count for points, the call sign of the station being called, and the strength and tone of the calling station, together with the serial number and signal strength report sent by the calling station, must be entered on the log.

5. The above items must be filled in before points can be claimed, that is, it is not sufficient to log a station call-

(Continued on page 21)

AUSTRALIAN DX CENTURY CLUB

We are pleased to announce that applications will now be received for membership of the Australian DX Century Club, in accordance with the Rules, which are set out hereunder.

RULES

1. The Australian DX Century Club is open to Australian Amateurs only with confirmed Contacts with one hundred or more Countries.

2. All Contacts must be made with Amateur Stations working in the authorised Amateur Bands, or with other Stations licenced to work Amateurs.

3. In cases of Countries where Amateurs are licenced in the normal manner, credit may be claimed only for Contacts with Stations using regular Government-assigned Call Signs.

4. All Stations contacted must be "Land Stations," Contacts with Ships, anchored or otherwise, and Aircraft cannot be counted.

5. All Stations must be contacted from the same Australian Call Area, and by the same licencee. Contacts may be made from the same Call Area under different Call Signs, if the licencee is the same person.

6. The A.R.R.L. Countries List, as published from time to time in QST shall be used in determining what constitutes a Country.

7. Contacts, to count for eligibility in the Club, may be made at any time after the return of Australian Amateur licencees following the end of the 1939-45 War.

8. A Certificate will be issued for Club membership, and Call Signs of members will be listed in "Amateur Radio." Listing will be in three Sections, "Phone," "C.W." and "Open," and the number of Countries will be shown against each member's Call Sign.

9. Following the first listing in "Amateur Radio," confirmation of additional Countries may be submitted, but not less than five at a time, and the listing will be changed accordingly.

10. Confirmations, i.e. QSLs, must be submitted for all Countries claimed, exactly as received from the Stations worked. Altered or forged confirmations may result in the applicant being disqualified. Confirmations must be accompanied by a list of Countries and Stations claimed, to aid in checking and for future reference.

11. Applications for membership shall be addressed to the Secretary of the Division of the W.I.A. in the State in which the applicant resides, and shall be accompanied by the necessary Confirmations and List of Contacts as required by Rule 10, together with a sufficient remittance in postage stamps to cover return of the Confirmations by Registered Mail.

12. Applications and Confirmations shall be examined by an Officer of the Division, appointed for the purpose by the Council of the Division, who shall, if satisfied that the applicant is eligible for membership in accordance with these Rules, notify the Federal Traffic Manager of the Applicant's Name, Call Sign, Address and number of Countries confirmed. The Federal Traffic Manager shall in turn arrange for the listing of the necessary particulars in "Amateur Radio."

13. The decision of the Federal Traffic Manager shall be final and binding in respect of any matter pertaining to these Rules.

14. Notwithstanding Rule 13 above, these Rules may be amended from time to time by decision of the Federal Council of the W.I.A.

THE A.R.R.L. LIST OF COUNTRIES

(From "QST" February 1947)

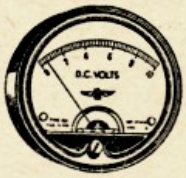
Aden and Socotra Island VS9
Afghanistan .... YA
Alaska KL7
Albania .... ZA
Aldabra Islands .... —
Algeria .... FA
Andaman Ids. & Nicobar Ids. .... —
Andorra .... PX
Anglo-Egyptian Sudan .... ST
Angola CR6
Argentina .... LU
Ascension Island ZD8
Australia .... VK
Austria .... OE
Azores Islands CT2
Bahama Islands VP7
Bahrein Island VU7
Baker Is., Howland Is., & Am. Phoenix Islands KB6
Balearic Islands EA6
Barbados VP6
Basutoland ZS4
Bechuanaland .... —
Belgian Congo .... OQ
Belgium .... ON
Bermuda Islands VP9
Bhutan .... —
Bolivia .... CP
Bonin Ids., & Volcano Ids., e.g. Iwo Jima .... —
Borneo, British North VS4
Borneo, Netherlands PK5
Brazil .... PY
British Honduras VP1
Brunei VS5
Bulgaria .... LZ
Burma .... XZ
Cameroons, French FE8
Canada .... VE
Canal Zone KZ5
Canary Islands EA8
Cape Verde Islands CR4
Caroline Islands .... —
Cayman Islands VP5
Celebes and Molucca Ids. PK6
Ceylon VS7
Chagos Islands VQ8
Channel Islands .... GC
Chile .... CE
China .... XU, C
Christmas Island ZC3
Clipperton Island .... —
Cocos Island .... TI
Cocos Islands ZC2
Colombia .... HK
Comoro Islands .... —
Cook Islands ZK1
Corsica .... —
Costa Rica .... TI
Crete .... SV
Cuba .... CM, CO
Cyprus ZC4
Czechoslovakia .... OK
Denmark .... OZ
Dodecanese Islands, e.g. Rhodes SV5
Dominican Republic .... HI
Easter Island .... —
Ecuador .... HC
Egypt .... SU
Eire .... EI
England .... G
Eritrea I6
Ethiopia .... ET
Faeroes, The .... OY
Falkland Islands VP8
Fanning Is. (Christmas Is.) VR3
Fiji Islands VR2
Finland .... OH
Formosa .... —
France .... F
French Equatorial Africa FQ8
French India .... FN
French Indo-China FI8
French Oceania, e.g. Tahiti FO8
French West Africa FF8
Fridtjof Nansen Land, (Franz Josef Land) .... —
Galapagos Islands .... —
Gambia ZD3
Germany .... D
Gibraltar ZB2
Gilbert & Ellice Ids. and Ocean Island VR1
Goa (Portuguese India) CR8
Gold Coast (and British Togoland) ZD4
Greece .... SV
Greenland .... OX
Guadeloupe FG8
Guantanamo Bay NY4
Guatemala .... TG
Guiana, British VP3
Guiana, Neth. (Surinam) .... PZ
Guiana, French, and Inini FY8
Guinea, Portuguese CR5
Guinea, Spanish .... —
Haiti .... HH
Hawaiian Islands KH6
Honduras .... HR
Hong Kong VS6
Hungary .... HA

A.G. HEALING

LIMITED

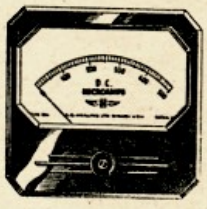
MANUFACTURERS AND DISTRIBUTORS FOR.....

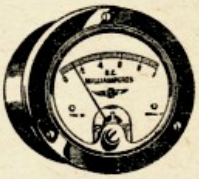
Electrical and Testing Instruments for all purposes made to British Standard specifications. Each instrument is accurate, + or —, to 2 per cent., and parts are heavily plated to prevent corrosion even under tropical conditions. "Healing" Electrical Meters equal the best imported types and will give accurate service for long periods under the most exacting conditions.



No. 10A round production mounting Black Bakelite Case.

Type No. 30A 4" square semi-flush Black Bakelite Case.





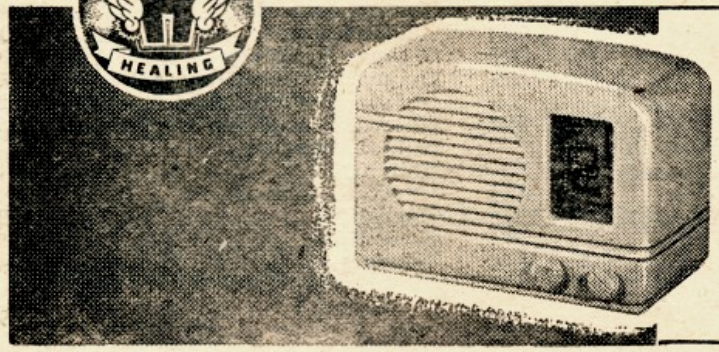
No. 20A 2½" round flush mounting Black Bakelite Case.

These, and all other Healing Radio Electrical Testing Units, are manufactured in our own factories and available from A. G. Healing Ltd.

OTHER INSTRUMENTS INCLUDE:

Oscillators — Multi-Testers — Signal Tracers, etc.

ALSO MANUFACTURERS AND DISTRIBUTORS FOR



Golden Voice RADIO

A. G. HEALING LTD. MELBOURNE, SYDNEY, ADELAIDE

H2.FP

Iceland ..... TF
Ifni ..... —
India ..... VU
Iran ..... EP, EQ
Iraq ..... YI
Ireland, Northern ..... GI
Italy I
Jamaica VP5
Jan Mayen Island ..... —
Japan ..... J
Jarvis Island, Palmyra Group, (Christmas Is.) KP6
Java ..... PK
Johnston Island KJ6
Kenya VQ4
Kerguelen Islands ..... —
Korea ..... —
Kuwait ..... —
Laccadive Islands VU4
Leeward Islands VP2
Liberia ..... EL
Libya LI
Liechtenstein HE1
Little America KC4
Luxembourg LX
Macau CR9
Madagascar FB8
Madeira Islands CT3
Malaya VS1, VS2
Maldive Islands ..... —
Malta ZB1
Manchuria ..... —
Marianas Islands (Guam) KG6
Marshall Islands ..... —
Martinique FM8
Mauritius VQ8
Mexico ..... XE
Midway Island KM6
Miquelon and St. Pierre Ids. FP8
Monaco ..... —
Mongolia ..... —
Morocco, French ..... CN
Morocco, Spanish EA9
Mozambique CR7
Nepal ..... —
Netherlands ..... PA
Neth. West Indies ..... PJ
New Calendonia FK8
Newfoundland and Labrador ..... VO
New Guinea, Neth. PK6
New Guinea, Territory VK9
New Hebrides ..... FU8, YJ
New Zealand ..... ZL
Nicaragua ..... YN
Nigeria ZD2
Niue ZK2
Norway ..... LA
Nyasaland ZD6
Oman ..... —
Palau Islands ..... —
Palestine ZC6
Panama ..... HP
Papua VK4
Paraguay ..... ZP
Peru ..... OA
Phillipine Islands ..... KA
Phoenix Islands, British ..... —
Pitcairn Island VR6
Poland ..... SP
Portugal ..... CT
Principe and Sao Thome Ids. ..... —
Puerto Rico KP4
Reunion Island FR8
Rhodesia, Northern VQ2
Rhodesia, Southern ..... ZE
Rio de Oro ..... —
Roumania ..... YR
Ryukyu Islands, e.g. Okinawa ..... —
St. Helena ZD7
Salvador ..... YS
Samoa, American KS6
Samoa, Western ..... ZM
Sarawak VS5
Sardinia ..... —
Saudi Arabia (Hedjaz & Nejd) ..... HZ
Scotland ..... GM
Seychelles VQ9
Siam (Thailand) ..... HS
Sierra Leone ZD1
Sikkim AC3
Solomon Islands VR4
Somaliland, British VQ6
Somaliland, French FL8
Somaliland, Italian ..... —
South Georgia VP8
South Orkney Islands VP8
South Sandwich Islands VP8
South Shetland Islands VP8
Southwest Africa ZS3
Soviet Union:—
European Russian Soc. Fed. Sov. Rep. UA1-3-4-6
Asiatic Russian S.F.S.R. UA9-0
Ukraine UB5
White Russian S.S.R. UC5
Azerbaijan UD6
Georgia UF6
Armenia UG6
Turkoman UH8
Uzbek UI8
Tadzhik UJ8
Kazakh UL7
Kirghiz UM8
Karelo-Finnish Rep. UN1
Moldavia UO5
Lithuania ..... UP
Latvia ..... UQ
Estonia ..... UR
Spain ..... EA
Sumatra PK4
Svalbard (Spitzbergen) ..... —
Swan Island KS4
Swaziland ..... —
Sweden ..... SM
Switzerland ..... HB
Syria ..... AR
Tanganyika Territory VQ3
Tangier Zone ..... EK
Tannu Tuva ..... —
Tibet AC4
Timor, Portuguese CR10
Togoland, French FD8
Tokelau (Union) Islands ..... —
Tonga (Friendly) Islands VR5
Trans-Jordan ZC1
Trieste ..... —
Trinidad and Tobago VP4
Tristan da Cunha and Gough Is. ZD9
Tunisia FT4
Turkey ..... TA
Turks and Caicos Islands VP5
Uganda VQ5
Union of South Africa ..... ZS
U.S.A. ..... W, K
Uruguay CX
Venzuela ..... YV
Virgin Islands KV4
Wake Island KW6
Wales ..... GW
Windward Islands VP2
Wrangel Islands ..... —
Yemen ..... —
Yugoslavia ..... YT, YU
Zanzibar VQ1

SUCH NICE PEOPLE

By "GREMLIN"

Got a nasty chip on my shoulder. Those unlicenced, misguided individuals who use our bands and our call signs for their pleasure, cluttering up our limited space with their playthings, put it there. In polite conversation we call them "pirates."

In scanning the daily paper have not noticed many prosecutions against these imposters, although we have been getting our share of publicity, haven't we? I thought that cunning box of tricks, nicely portrayed in a daily, apparently possessing the clairvoyant power of detecting the unlicenced BCL, would have found the pirate a push-over. Apparently no. Why not? Maybe these pirates are cunning lads—they say rats are. Maybe that box of tricks must rest sometimes, or maybe you and I just growl about the fungus on our hobby and leave it at that. Was it a Ham who inspired some gent to say we British are a far too tolerant race?

The time has come for us—in the words of the classics—to get really stuck into these pirates and track them to their lairs. After all, we have the best opportunities for recognising these individuals and that is probably half the battle. An up to date call book would also help. If you know a pirate, point the finger at him—or get him to pass that simple examination I read about!

Some will probably say, where do we start? I don't know, maybe the disposal joints, but I do say, let's get organised and protect our domain. So, into battle Hams, and when you see a piratical head, kick it!

* * * *

Now for the meat—or as some prefer—tripe, ever remembering, "no hand-claps for VK3 and kicks for VK2." Sorry I can't be diplomatic, wasn't born that way.

* * * *

To 2GH (Chas.) goes the prize of the rottenest sig to date, never to be regained, I hope. Boy, what a note. The "T" system was never designed to cope with your effort spreading over 75 Kc. of the 7 Mc. band. I heartily agree with Phil (2GS) who suggested it sounded like a TNT and to try it out on a dummy aerial before turning it loose on the mob again. Was I surprised, Phil, when you got a full QTH in reply to your query? I guess our thoughts were on similar lines. Let's hope Chas does not drop the odd dit and point the bone at you Phil!

* * * *

Talking of dits, 5HN flings them around with gay abandon when fingering that bug.

(Continued on Page 24)

FEDERAL NOTES.

I.A.R.U. CALENDER NEWS EXCERPTS

The 1947 International Telecommunications Conference opened in Atlantic City, New Jersey, U.S.A., on 16th May last, at which about 70 countries and independent colonies are represented by about 600 attendants. The tremendous task of revising the world's radio regulations, complicated by the many war-born strides in techniques, the development of many new services needing frequencies, and the fact that no conference has been held for nearly ten years, is well recognised by the delegates. The conference therefore decided to set up ten committees to deal with the many matters requiring attention.

Obviously the most important to us—indeed to all the conference—is the committee on allocations, headed by Colonel Sir Stanley Angwin, Chairman of the United Kingdom delegation, who was the leader of this work at Madrid, Cairo and Moscow. You will be interested in a summary of the original proposals by the various nations as they affect present or proposed amateur frequencies:—

Australia.—3.5-3.8, 7-7.2, 14-14.4, 21.1-21.5, 28-30, 50-54, 166-170, and higher bands beginning at 1215 Mc.

Canada.—Same as U.S.A., below.

Chile.—(In a limited proposal covering 2-6 Mc.) 3.5-3.75 Mc.

China.—3.5-4, 7-7.3, 14-14.4, 21-21.5, 28-29.7, 50-54, 144-148, 220-225, 385-414, and higher bands beginning at 1215 Mc.

Czechoslovakia.—A limited proposal, but indicating 7.1-7.3 for broadcasting, and a V.H.F. allocation allowing but little for the amateurs.

Denmark (with Iceland, Norway and Sweden).—1.715-2 (shared, 10 watt limit), 3.5-3.6 Mc., proposal ends at 4 Mc. but indicates that 7.2-7.3 should go to broadcasting.

Ecuador.—Proposes retention of all Cairo amateur bands, plus 21-21.5 Mc. and a 27 Mc. band on a world-wide basis.

Egypt.—100 Kc. at 7 Mc., 250 Kc. at 14 Mc., 500 Kc. at 21 Mc., nothing else below 25 Mc.

France.—3.5-3.6, 7-7.15, 14-14.4, 21.1-21.45, 28-29.7, 70-71, 144-148 shared, 420-460 shared, and higher bands beginning at 1215 Mc.

India.—1.715-2 Mc. (shared, 10 watts limit); no indication of intentions as to other bands.

Ireland.—No indication of amateur intentions except back Loran in the 1.8 Mc. region.

Netherlands.—3.5-3.7, 7-7.15, 14-14.4, 21.25-21.45 and 28-29.7 Mc.

Netherlands Indies.—No indication of amateur intentions, except 7.2-7.3 Mc. for broadcasting.

Rumania.—3.5-3.7, 7-7.3, 14-14.4, 21-21.5 Mc.; proposals end at 23.8 Mc.

Soviet Union.—3.5-3.9 (shared), 7-7.15, 14-14.4, 21.1-21.5, 28-29.7, 70-72.8, 174-178, and higher bands beginning at 1145 Mc.

Switzerland.—1.925-2, 3.65-3.95, 7-7.2, 14-14.4, 21-21.45, 28-30 Mc.

United Kingdom.—1.715-2 (shared, 10 watts limit), 3.5-3.6, 7-7.2, 14-14.4, 21.25-21.45, 28-29.7, 166-168, 400-415 (shared), and higher bands beginning at 1215 Mc.

United States.—3.5-4, 7-7.3, 14-14.4, 21-21.5, 28-29.7, 50-54, 144-148, 220-225, 420-450. and higher bands beginning at 1215 Mc.

Venezuela.—1.8-2 (shared), 3.5-4, 7-7.3, 14-14.4, 21-21.5, 28-29.99 Mc.

It is painfully evident from this tabulation that there is a great deal of initial pressure on the Cairo amateur bands. While there has been no actual decision as yet the following is the complexion of things with respect to the amateur service, in the 2.85 to 25 Mc. region, emphasising that the discussions are STILL in their preliminary phases.

The 3.5 Mc. band is very likely to suffer a reduction in the European region, as is indicated by the proposals of those nations. Present suggestions vary from an exclusive band of 100 Kc. to a mixed-shared band of about 300 Kc. The 3.5 Mc. band will be available in the Americas in its Cairo width of 3.5-4 Mc. only if a regional agreement is possible, as seems likely.

The 7 Mc. band is causing us the greatest concern. Practically all the nations of North and South America propose a 300 Kc. band, but Australia, India, the Scandanavian countries and the United Kingdom insist on only 200 Kc., the remainder to be broadcasting exclusively; France and the Soviet Union are firm in their proposals of 150 Kc. for amateurs, the remainder for broadcasting exclusively. While the top 100 Kc., of this band has not been particularly useful for amateurs outside the Americas since Cairo, it may be that a further cut in the European region will be made so that broadcasting can have more space, and the change may even affect the Americas if the Governments on this hemisphere do not insist upon a regional allocation as at Cairo.

So far, as is again evident from proposals, there is general agreement to a figure of 400 Kc. on our 14 Mc. band. We expect the Cairo allocation to be continued.

There has been a surprising amount of support for a new band of frequencies for the amateurs at 21 Mc., so much so that at this point sincere appreciation is expressed to the officers of the various member societies (of which the W.I.A. is one—Ed.) who obviously have contributed much to Government thinking with respect to the new band. While the end result may not furnish the full 500 Kc. width, it seems certain that we shall get some new frequencies at 21 Mc., the tentative figure at the moment being 450 Kc.

From proposals it is evident that there is general agreement, so far, in 28-29.7 Mc., which we may expect as exclusively amateur. In the higher frequencies, there are great differences in the proposals and we cannot safely make any estimate of the probabilities beyond saying that we may expect to obtain a small share of the range above 30 Mc.

It is advised that by unanimous vote of all member societies, the Union Belge des Amateurs-Emetteurs (U.B.A.) has been admitted as a member of I.A.R.U. Also applications have been made by the Chinese Amateur Radio League (C.A.R.L.), China; Radio Club de Chile and Radio Club Paraguayo.

Following the approval of all European Societies the Netherlands (V.E.R.O.N.) is to proceed to inaugurate the first combined DX contest rather than a number of small individual contests.

AMENDMENTS TO REGULATIONS

Federal Executive have been negotiating with the Department for some time with the view to having some of the restrictions in the present regulations removed. Some of these restrictions have already been deleted, and further privileges announced. The most recent of these are (1) the abolition of the six months probationary period and (2) the use of frequency modulation and pulse transmission on certain frequencies. The following frequencies are available for use of frequency modulation:—27.187-27.455 Mc., 50-54 Mc. Both frequency modulation and pulse transmissions are permitted on 166-170 Mc., 1345-1425 Mc., and other amateur bands to 10,000 Mc.

NEW APPOINTMENTS

New South Wales Division.—Traffic Manager: VK2ARE, R. A. Egan.

Tasmanian Division.—V.H.F. Officer: VK7CW, C. A. Walch; Publicity and Sub-Editor of "A.R.": VK7YY Watson.

Mr. J. MacIntosh (VS2AA) would be extremely grateful to receive replacement of cards which the Japanese looted. The two call signs affected are VS2AF and VS1AA and the period is 1934 to 1939. Mr. MacIntosh will be delighted to receive a card confirming any of his old con- Intosh, Postal Dept., Kaula Lumpur, tacts. The address is Mr. J. Mac- Malaya.

This is it! the "640"

ALREADY ACCLAIMED IN ENGLAND AS THE FINEST 'HAM' SET YET DESIGNED

EDDYSTONE AMATEUR BANDS COMMUNICATIONS RECEIVER MODEL 604

MAIN TECHNICAL FEATURES

1. Receiver has been designed primarily for Amateur Communication purposes, tuning range from 31 Mc/s to 1.7 Mc/s.
2. Designed to operate from Standard AC Mains with Inputs of 110 volts 200/240 volts, 40/60 cycles as well as from a 6 volt battery by the use of a separate vibrator unit.
3. Inclusive all valves, the "640" is a 9-valve job with one tuned RF stage, FC, two IF stages, detector-AVC-1st audio, 2nd audio output, noise limiter, BFO and rectifier. The valves used, in that order are EF39, 6K8, EF39, EF39, 6Q7, 6V6, EB34, EF39, and 6X5. These are all international octal based on the Mullard or Brimar versions and are therefore easily replaceable.
4. INPUT IMPEDANCE—400 ohms.
5. TUNING RANGE—
   (1) 31 to 12.5 Mc/s.
   (2) 12.5 to 5 Mc/s.
   (3) 5 to 1.7 Mc/s.
6. TUNING. An electrical band-spread arrangement is used for this purpose. Fly-wheel control is utilised on the band-spread condenser drive. The scale is clearly marked with all amateur bands, and is so arranged to enable accurate re-setting to a spot frequency.
7. I.F. FREQUENCY—1600 Kc/s.
8. CRYSTAL FILTER is vacuum mounted to provide a high degree of stability. Phasing control and "in/out" switch are brought out to the front panel.
9. Sensitivity is better than 2 microvolts input, for 50 milliwatts output, at all frequencies.
10. OUTPUT. Audio frequency output exceeds 3.5 watts.
11. "S" METER. A socket is provided for an external "S" Meter.

● READ THESE TRIBUTES . . . FROM THE "G's" OVERSEAS

● "Your claims are fully justified, the performance being excellent in every way. The outstanding feature is of course the Wonderful signal to noise ratio, and this, together with its excellent sensitivity, should satisfy the most confirmed critic.

On the 10 metre band I have compared received signals using the "640" and a 3 element beam, with the same received signal at other stations using 3 element beams, time and time again (hence the delay in sending my report), and I have proved to my satisfaction that the "640" has the advantage, taking an average over a large number of contacts, which practical report you will probably appreciate more than most laboratory reports. The excellent signal to noise ratio of the "640" has enabled me to carry through a QSO which, with my previous Station receiver, would not have been completed, under similar conditions. I have spent quite a lot of time on these comparative checks, and have proved these points conclusively.

The noise limiter is extremely effective, as is the crystal filter. In conclusion, I state that the "640" is a really fine job, which fills a long felt want for a standard British Amateur Communications Receiver, which will have my hearty support, and I hope that this is the first of a new series of Amateur Instruments by Eddystone.

I might add that the "640" is now my own station receiver, and I'm rather fussy."

● "It proves it to be a most remarkable receiver and you are to be congratulated on producing such an outstanding 'Ham' set, and we wish you every success in this market."

● "Having fully tested the model "640", it fully comes up to the standards required for a Communications receiver of this nature, especially on the 'Ham' bands we were able to separate stations working almost on top of each other.

The signal to noise ratio is extremely good. We have great hopes for this set during the coming season. You are to be warmly congratulated on the production of a very fine model."

● "The "640" was tried out over the week-end by our Mr. W. and J. B., an ex-Merchant Navy Radio Officer of some ten years operational experience. The latter was delighted with the sharp and clear C.W. note obtained by this receiver. We compared general sensitivity, selectivity and ease of control with two highly rated USA RX. "640" compared more than favourably with either model. Noise level for a given signal in fact was much lower in either case and the measured carriers of very weak signals were in several instances slightly superior on the "640." The appearance is really a fine job and altogether we feel that if this set was exported even to the USA it would readily find enthusiasts who still believe we in Britain can produce the goods without a lot of unnecessary trimmings and yet efficient and exacting standards."

These are extracts from just a few of the numerous congratulatory letters received by the makers of the "640."

THIS FINE SET IS ON THE WAY . . . BUT SUPPLIES WILL BE LIMITED SO . . . PLACE *YOUR* ORDER *NOW* WITH YOUR AUTHORISED DISTRIBUTOR

Australian Factory Representatives:

KEITH HARRIS & CO. PTY. LTD. 51 William St., Melb. - - - Phone MB 2119

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

The Postmaster General's Department advises that the second issue of the list of Experimental Stations in Australia, Papua and New Guinea will be on issue approximately 15th August. The Department intends to issue quarterly supplements and the new issue will also contain the first supplement. The price of the list (supplements included) remains at two shillings per annum.

The P.M.G. Department also announces that the policy of issuing VK4 call signs to experimental stations in Papua and New Guinea has been reversed. From 1st June stations in Papua and New Guinea have been issued with VK9 call signs. Up to the moment of writing approximately 15 licences had been issued. The list of VK9 stations will appear in the new list mentioned in the first paragraph of these notes.

The Department states that pre-war call signs that have been held awaiting the application of pre-war owners, are now available for general issue and are being allotted new licencees and applicants.

An interesting description of the purpose and apparatus at OIX7 (Finland) has just come to hand. The station which was designed and operated by pre-war OH2NM belongs to the Finnish Broadcasting Company and was installed to compile data on reception at regions where the normal Finnish Shortwave stations were being poorly received. OIX7 had an input power to the final of 600 watts. The line up is as follows 6V6G c.o. on 7 Mc., two 807 doubling stages to 28 Mc., 814 buffer amplifier and two Amperex HF300s final. The antennas used were of the Lazy H type and gave excellent results with practically worldwide contacts. Contact with VK and ZL was the most difficult as signals from VK and ZL were very weak in Finland during the spring of 1947.

G5UB/P (Jim Wetherill) has again left these shores after a short stay in Melbourne and a longer, and equally as pleasant, stay in Sydney. He can be contacted on most bands on his trip back to Vancouver. His QTH in Vancouver is 4910 East Hastings St., Vancouver.

Due to a typographical error in these notes in June "A.R." the A.P.O. number of the new J QSL Bureau was given as 800. The correct address is repeated: Major Lloyd Colvin, 71st Sig Ser. Bn., APO500, U.S. Forces, Japan.

Len Burston (ex-VK3BV I think) is operating a station with the forces in Japan under the call sign J4AAD. Len says Japanese printing is so bad that he has been forced to send to Australia for decent cards.

G. Warner (VK3ABW) has now moved on to Port Moresby and operating under the call sign of VK9GW. His QTH is care Overseas Tele Communications, Port Moresby, Papua. Quite a change of climate from Ballan, Victoria, I should think. I am endeavouring to persuade him to accept the appointment of QSL Manager for VK9, but no reply so far.

The R.E.F. advises of an International Scout Jamboree to be held in France from 4th to 25th August and desires prompt advice of any intending visitors from Australia. That is the best my meagre knowledge of the French lingo can extract from the letter.

Dr. Jose Polak (XE1SE), of Mexico, D.F., at considerable expense airmailed a number of sarapes to stations in Australia with whom he had phone contacts. The customs' notifications, etc., arrived in advance of the sarapes and caused quite a little speculation among the custom officials and also myself. We could not ascertain whether you ate them, wore them, or took them to bed with you. However they proved to be highly ornamental hand-woven affairs about 14" x 8", with a silk fringe at either end and were of bright and variagated colors. In the centre was woven in large letters, the call sign of the recipient. They probably are intended to be slung over the left shoulder at hamfests, etc., but methinks they would find better and more frequent use as a table runner. The Customs Department

graciously forewent any duty on the consignment. Trust the recipients have received them safely and acknowledged the gift.

Here you are philatelists—OZ7NJ, Jorgen Nielsen, 7 Falkonervaenget, Copenhagen, V. Denmark. States he is "very urgent stamp collector."

The following was copied from W1AW towards end of June:—"The Radio Operator of LI2B expedition Kon Tiki advises that excellent cooperation is being received from amateurs in relaying traffic from the raft to points in the U.S.A. To avoid interference it is requested that amateurs who wish to call wait until LI2B is clear of traffic. LI2B will CQ at 1200 GCT for 14 Mc. contacts.

"The Ro—— antarctic expedition is operating from land base on 14 Mc. phone and c.w. using the call W3LYK/Antarctica. Traffic may be routed to the expedition via the REBEL and PELICAN nets on 7100 Kc."

Bill Wright, of South Plympton, S.A., a listener, goes in for the game properly. Bill had a lot of signals experience in the R.A.A.F. and often wonders why he doesn't lift out a call sign. Uses a Philips receiver with converter ahead for some frequencies and has a nice three element rotary which is doing its stuff in no mean style. Also owns an AR8 and a decent frequency meter.

Up bobs Eric Trebilcock again and still at Wynyard, Tasmania, helping himself to a large share of receiver DX. Has now heard 156 countries and confirmations from 81. Quotes he heard W4FU stating that his station had contacted 160 post-war countries. These Ws must dream up new ones. Eric has heard the following countries on 7 Mc. during June: G, OK, D, OE, GM, PA, LI, UA, UB, SM, HB, KM6, VR2, KL7, W, ZL, I, ON, and ET. As Eric says there's still DX to be had on 7 Mc. for those who care to listen. Thanks for your helpful and informative notes Eric.

The VK3 QSL Manager, Graham Roper, VK3ZB, 26 Lucas St., Caulfield, S.E.8, Victoria, would be grateful if stations not attending the monthly hand-out, and who are not country W.I.A. members, would send a large stamped addressed envelope.

DIVISIONAL NOTES

NEW SOUTH WALES

Secretary: Peter H. Adams, VK2JX Box 1734 G.P.O., Sydney.

Meeting Place: Science House, Gloucester and Essex Streets.

Meeting Night: Fourth Friday of each month.

The usual large attendance was present at the monthly general meeting held on Friday, 27th June. After the large crowd milling around the QSL officer, Jim Corbin (2YC), had been persuaded to take their seats, the chairman, Morrie Myers (2VN), opened the meeting. A warm welcome was extended to G5UB-VE7ALG, yet another Ham operating mobile marine, who met with a ready response to his request for "skeds," particularly on 54 Mc.

During general business, the Membership Secretary gave notice of his intention to move, at the July meeting, that the Articles of the Institute be amended to allow of up to one thousand members in the N.S.W. Division. The present limit, five hundred, has almost been reached. This augers well for the future of the Division.

Honorary Life Membership was extended to Messrs. Bill Moore (2HZ) and Bill Zech (2ACP) for their services to the Institute.

The main business of the meeting was a lecture by Mr. Neville Williams (2XV), whose talk on "Rectifiers and Power Supplies," was listened to with keen interest. At the conclusion of his lecture, Mr. Williams replied to numerous questions and received an enthusiastic vote of thanks.

Don't forget those articles for "Amateur Radio." Send yours to the Technical Officer, N.S.W. Division. It may win for you the £1/1/- prize.

NORTH COAST AND THE TABLELANDS

2ADN on 7 Mc. phone again after an absence of several years. —...— 2AHI has clipper and filter circuits in his modulators and uses only seven watts input to a sloping V. —...— 2SL occasionally on 7 Mc. phone, would like to return to 3.5 Mc. but power leaks too vicious. —...— 2WQ is QRL with new rig, should be on shortly. —...— 2NY also QRL with new receiver. Works some nice DX. —...— 2SH has been on holidays and visited several Hams around Orange, Bathurst and Sydney.

2GH, new Ham at Kemsey, puts a nice signal on 7 Mc. —...— 2DS recently received call sign; QRL with gear. —...— 2WC is generally heard on 14 Mc. using 807 p.a. to a co-ax fed doublet; new gear under way. —...— 2JK another new call at Coff's Harbour, on 7 Mc. and will soon run 50 Mc. tests with 2PA. —...— 2PA's activities are limited until new home is completed. Has new lazy H antenna on Europe. 50 Mc. receiver completed, transmitter under way. —...— 2XO, "Garden of Eden," inactive due to sickness, sends 73 to all the gang. —...— 2RK on 7 and 14 Mc. with v.f.o. An 807 feeds centre fed zepp. —...— 2ADE reports good DX. Post-war total now 137 countries, experimenting with clipper and filter circuits. Please send your notes to Zone Officer Bob Gream (2AFP) at Casino.

NEWCASTLE ZONE

2BZ has a new 14 and 28 Mc. beam on 36 foot telegraph pole ready to go up, when the local gang supply the necessary push. —...— 2AHA very pleased with 100 countries post-war, uses twin 28 and 14 Mc. beam. —...— 2PQ a new Ham with a fine xtal signal getting to W and G with 25 watts. —...— 2AGD puts remarkable signals into ZS and G with a unique five element beam. —...— 2CS has the receiver built and the transmitter is about to receive attention. —...— 2KB enjoys a good rag-chew on 14 Mc. and makes a pleasure out of Ham Radio. —...— 2UF has broken the long silence, back on 28 Mc. with nice phone. —...— 2AMM now a poor married man so we may hear him on again sometime. —...— 2FP still chasing DX on 28 Mc. phone; 74 countries up with 35 watts. —...— 2CI has nice quality phone on 14 Mc. —...— 2ZC heard on 14 Mc. c.w., giving the phone a rest. —...— 2AGY heard frequently on 14 Mc. phone. Please send your notes to Ernie Baker (2FP), Hamilton.

COALFIELDS ZONE

The gang has not been as active; conditions a little patchier than usual. Yanks have been heard calling 2YO but no sign of George. —...— 2XT can be found on 7 Mc. most week-ends. —...— 2KZ is a 28 Mc. man except for an occasional excursion to 27 Mc., talks of winding 14 Mc. coils. —...— 2MK is mainly on 28 Mc. and talks of trying 50 Mc. —...— 2ADT very QRL during last month. Has 70 countries on 28 Mc. phone. —...— 2PZ still to be found on 7 Mc. phone. —...— 2YL still busy and little activity. Please send your notes along to Harry Hawkins (2YL) in Cessnock.

WESTERN ZONE

2EL is located in a fowl shed at Narromine. Has 33 countries up and W.A.C. in four hours with an 807 in the final. —...— 2NS has a two element rotary up, results to date not too good. —...— 2II had a little modulator trouble now f.b. —...— 2AMR heard on 7 Mc. using old rig; phone very good. —...— 2WH had a little modulator trouble in the AT20; reports DX very good. —...— 2BT heard on phone, sounds like a No. 11. Believe another rig under way. —...— 2JC on 3.5 Mc. with really fine phone. —...— 2ACU and 2DO seem to be in trouble with antenna, hum, motors in wells, etc. —...— 2AP, late of Parkes, and his XYL (ex-VK2YW) were home in Richmond on leave. —...— Glad to hear 2KR is on the mend after his accident. —...— If any of the western gang have any news please send it along to Jack Russell (2QA) of Nyngan.

SOUTHERN ZONE

2EU had some trouble with lack of audio in the modulators; re-built amplifier with improved results. —...— 2APW building v.f.o. using 6SK7, 6F6, 6F6 with satisfactory results, next job is a hetrodyne frequency meter. —...— 2GG and 2OJ still working on receivers, leaving little time for activity. —...— 2ANQ progressing slowly with his rig. —...— 2VK having a few contacts on 7 Mc. c.w. —...— Send your notes to Noel Arnold (2OJ) Albury.

VICTORIA

Secretary: A. B. D. Evans, VK3VQ, Box 2611 W G.P.O., Melbourne.

Meeting Night: First Wednesday of each month.

Meeting Place: Radio School, Melbourne Technical College.

"FOOD FOR R.S.G.B." APPEAL

The acting Secretary of the R.S.G.B. has notified the Appeal Committee that the first 16 parcels have arrived in England, and by now will be distributed by ballot to members. Another 26 parcels have been sent, making a total of 76 parcels despatched to date. Each of these parcels contain about 8 lbs. of foodstuffs making over a ¼ ton of food sent.

At the general meeting held on the 2nd July, donations by the box collection totalled £10/15/6. The raffle of a new 813 and socket was won by VK3KM and yielded a sum of £12/4/—a very excellent effort for the night. During the meeting two very generous offers of radio gear were made for the raffles. The Committee wish to express their gratitude to both VK3TO and the other donor (whose name is not known at present) for these very generous gestures.

The following raffles will be held at future general meetings:—

(1) A new 5BP1 (5" c.r.o.) and socket—August 5.
(2) A new 813 and socket—September 3.
(3) A Disposals Transmitter—October 1.
(4) 9002, 9003, 6J6, two 1N34s and 455 Kc. crystal—November 5.

Tickets for each of these raffles are 1/- each and Country Amateurs interested should send postal notes, made payable in Melbourne, to VK3UM, the Appeal Secretary, indicating the raffle for which the tickets are required.

The following country organisers have been appointed to conduct the Appeal in their Zones:—

VK3YV, North Eastern Zone.
VK3QC, South Western Zone.
VK3QZ, Eastern Zone.

Organisers are still required in the Central Western and North Western Zones, and any amateur who can undertake the organising is asked to communicate with VK3UM without delay. This is a very worthy cause and the Committee desire all Amateurs in Victoria to be represented in the contributions to our English brother Amateurs, so send in your donations. All cheques or money orders should be made payable to the "W.I.A. Food for Britain Patriotic Fund."

The total donations to the Fund are now £110/15/4, the total expenditure on parcels £70/13/- and cash in hand and bank £40/2/4. Tune into VK3WI every Sunday morning at 1130 hours on 7 Mc. for further news of the Appeal.

TECHNICAL ADVISORY COMMITTEE

The Committee is preparing plans and estimates for proposed alterations at the Institute Rooms for a laboratory test bench. The implementation of this plan will make full test facilities available for receivers, instruments, transmitters and meters.

It is again requested that any Amateurs who have a Ham-built Amateur-band receiver of their own design, are asked to send details of it through the Magazine Editor. The T.A.C. will prepare the article, if necessary, for publication. Meeting night is third Tuesday in each month.

V.H.F. Group

At the last meeting of this group, the results of the recent Field Day for 166 and 50 Mc. gear was discussed. It was decided to hold the next Field Day on 7th September, and the co-operation of other States and New Zealand have been sought. It was also decided to hold Field Days every two months to promote a greater interest in the "very highs."

The next three meetings of this group, will be devoted to discussions of equipment used on 166 and 50 Mc. and the results of these discussions will be published in "A.R." The discussions will be on Aerials, Transmitters and Receivers. For a detailed diary of V.H.F. doings, see notes elsewhere in this issue. Meeting night is first Wednesday in month.

Receiver Group

The last meeting of this group was a great success, and a greater interest is now being shown in the group's activities. All interested are cordially invited to be present. The meeting held on 23rd July consisted of a demonstration of modulation envelopes, using the c.r.o. in conjunction with the i.f. stages of a receiver. Meeting night is fourth Wednesday in month.

Libraries

At present, very little interest is being taken in the very fine reference technical book or instrument libraries by members. The range of both books and instruments available are contained in past issues of "A.R." Use this service—it is yours. Books and instruments are available on any meeting night providing the Secretary of the T.A.C., VK3UM, is notified the day before the general meeting.

General Meetings

Unfortunately, the lecturer for the last general meeting, Mr. Wall, Chief Navigation Instructor for A.N.A., was unable to be present owing to absence from the State, but instead, three very interesting and instructive films were shown; two on the electrochemical action of batteries and the other of general interest on farm mechanisation in Britain. As the next general meeting on the 6th August is the Annual General Meeting, the time will be spent in W.I.A. business and election of office-bearers.

S.W. ZONE NOTES

The first S.W. Zone hook-up took place on Sunday, 6th July, and proved to be very popular; so much so that it took quite a long time to get over the first round.

3AMP assures the gang that the next will be a more snappy affair and ideas gleamed from the experience of the first hook-up will be put into operation. A time limit will be put upon transmissions and it is possible that the time of commencement may have to be altered to dodge QRM. We want your ideas on that matter and also whether you favour 7 or 3.5 Mc., so let us know fellows.

Some personal paragraphs have been received from 3HG for which the writer (VK3BI) offers thanks and wishes some others had sent in some news too.

Bill Ross, of Grassmere, has offered to donate some gear, for Zone trophies in contests or other activities, for which we thank him very much.

3AMP has new transmitter in operation for 7 and 3.5 Mc. Sounds OK too Murray. —...— 3MC has big new rhombic which is working very well indeed and is rebuilding rig to rack and panel. —...— 3NC working nightly skeds with VE2AX still with only six watts, and has new two tube super working well. —...— 3HG recently lost two antenna poles in one night as a result of sabotage by one Hereford bull!! Also did in two genemotors. —...— 3MH is receiving a huge stack of QSLs so must be working DX well. —...— 3BI has new v.f.o. working experimentally and is pleasantly surprised at stability.

By the time you read this the Zone DX contests will be over and I hope you have sent in your entries. I would also be pleased to receive your 5/-

QUEENSLAND

Secretary: R. Thorley, VK4RT, Box 638J, G.P.O., Brisbane.
Meeting Place: State Service Building, Elizabeth Street, City.
Meeting Night: Last Friday in each

A large number of members rolled up to the general meeting of the Queensland Division held on Friday, 27th June. The number present constituted a third of the present membership, which is a round-about way of announcing that we now have 115 members, the highest ever, we believe. Mr. Frank Nolan (4FN) spoke on a suggestion by 4LN of Gympie that something might be started along the lines of a Food for Britain cam-

paign. Mr. Argeat (4KH) also spoke at length on the subject and outlined his own experiences in handling Food Parcels and so on. At all events a fair degree of success resulted from the President's appeal for contributions, and £8/15/- was collected and the sum of £5/10/- was promised each month in addition to stray donations. Any members wishing to assist should contact the Secretary who will pass the matter on to the Committee formed to handle the project, the members being 4FN, 4KH and 4RC.

The President (4AW) regaled members with an account of the recent D.F. Field Day. The hidden transmitter was operated by 4ES, and Herb hid it to such good effect that nobody found the thing at all during the morning. It seems that 4RY's party, comprising 4FB, 4JP and himself, might have found it in the morning but a "gremlin" had tampered with the coils of the receiver and the calibration was astray. The local 50 Mc. lights, 4RT and 4KB, won the event in the afternoon, and the runners-up also happened to be V.H.F. men, being none other than 4RY and company anxious to make amends for the morning. The event we might add was held on 7 Mc. It seemed that a good time was had by all, the writer regretting that he was not able to attend.

To return once more to the general meeting which we left a few moments ago, a most interesting lecture was presented by Mr. Vince Jeffs (4VJ) who chose for his subject "Frequency Modulation." Vince had evidentally gone to considerable pains in the preparation of his talk and those present were treated to a most comprehensive account of F.M., its advantages, disadvantages and of the gear used for transmission and reception. At the conclusion of the lecture Vince demonstrated the action of a limiter when used with a conventional superhet.

4WI listeners are being well catered for these days as regards lectures. On Sunday, 6th July, 4KB presented the first of a series of talks of V.H.F. character, the title of the first being "An Introduction to Micro Wave Technique." Pat dealt mainly with the Cavity Resonator and Transmission Lines or Wave Guides. Charts with appropriately numbered diagrams had been distributed to those members in the country requesting them. and the clarity of the lecture was thus materially assisted. It seems that 4WI has quite a large audience as many reports are received from non-members and other listeners. The transmissions on 14 Mc. are worth keeping in mind if you are having trouble on 7 Mc. in receiving 4WI. Reception in various parts of the city area is considerably better on the higher frequency and between one or the other we are sure you will enjoy good reception, not perhaps as excellent as that spoken of by 4VJ when dealing with F.M., but good not-with-standing.

It is hoped shortly to issue to country members a monthly bulletin or leaflet giving the latest Divisional dope. Contents will probably include details of forthcoming Field Days, etc., the results of ones just held, ionospheric tips, outstanding DX that happens to be about, Council report or a summary of same, and in general any news that we think will be of interest. The scheme has barely seen the light of day at this writing, but it has so much to recommend it that we feel justified in mentioning it here. It will be realised that in lots of cases it is impossible to publish in "A.R." any such material, for the simple and obvious reason that the news is very much out of date when published, or to take the other extreme, plans for Field Days, etc., are never finalised so far in advance as to permit of their insertion in "A.R." in time to be of use.

Although the matter is primarily a V.H.F. one, and is dealt with in that Department, some 24 Ground Plane Antennas were disposed of at the June general meeting, every one being of the opinion that they were an extremely good buy (7/-) for those V.H.F. bent. The frequency these antennas were designed for was 74 Mc. but conversion to 50 Mc. is very simple.

SOUTH AUSTRALIA

Secretary: E. A. Barbier, VK5MD, Box 1234 K, G.P.O., Adelaide.
Meeting Place: 17 Waymouth Street, Adelaide.
Meeting Night: Second Tuesday of each month.

The monthly general meeting of the W.I.A. was held on Tuesday, 8th July, and an all-time record attendance was reported. Some estimates gave it as 300 members, some as 200, but I will be conservative, and give it as 230. The attendance was in theatrical terms a "sell out," in fact at the commencement of the meeting there were a large number of people still out in the street trying to get in. Using a great deal of persuasion they were eventually squeezed in and all were happy.

Among the visitors, many of whom could not get near the visitors' book to sign, were Keith Bun (VS1AV) and Johnny East (ex 2nd op. at ON4RM) who were both from the visiting aircraft carrier "Glory," Arthur Evans (VK3BQ), Inspector I. Delderfield, Chief Police Technician Mr. Gosse, and many members of the police force who are interested in F.M. To the many visitors who have unfortunately been missed, we apologise and can only blame the huge crowd.

The lecturer was Mr. Frank O'Grady of the P.M.G's. Department, who spoke on Frequency Modulation.

Mr. O'Grady could have been pardoned for blinding with science the entire gathering, as the subject F.M. lent itself to an array of formulae and mathematics far beyond the comprehension of all members present. However, as has often been said, the secret of greatness is the ability to bend to the common touch, and Frank (if I may be pardoned) bent to the subject and applied it to amateur radio. He prefaced his lecture by saying that he had not expected such a large audience, but it was evident that everybody was becoming F.M. conscious. He then said that many people imagined that F.M. was something new, but many old timers in Ham Radio were using it when they were on "loop" phone many years ago, accidental but true.

During spark days the Poulsen Arc people tried F.M. but experienced considerable difficulty in applying it to the arc system. The original idea behind F.M. was an endeavour to save space in the radio spectrum and to eliminate QRM. Unfortunately mathematicians were able to show that whether F.M. or A.M. was used the crowding of the spectrum and the QRM was about equal. Dr. Armstrong in 1929, endeavouring to reduce static and noise in radio reception, combined a number of separate conclusions and tests to achieve results and thus came across all the ingredients for successful F.M. When we consider that in a short space of three years there has sprung up in America 300 F.M. stations and 500 under construction, with a host of applicants ready and willing to take out licences for F.M. as against some 900 odd A.M. stations over a period of the past 20 years, we begin to realise that F.M. is definitely on the way to oust A.M. as applied to broadcasting. Frank said at this point that he could not hope to cover all phases of F.M. as applied to broadcasting in one or many nights, but would confine his remarks to the amateur viewpoint only.

For high quality broadcasting, F.M. demanded the wide deviation system whereas in amateur work where high quality was of secondary importance a narrow band system of F.M. was quite satisfactory. He emphasised the point that a definite distance from a station the signal to noise ratio drops suddenly with wide band F.M. but narrow band F.M. holds up past this point and is therefore more applicable to amateur radio. In A.M. two stations working on a shared channel principle required only a one per cent variation in strength or frequency to cause trouble to listeners situated midway or so between the two stations. With F.M. the interfering station would have to be at least 50% stronger to cause interference due to what is known as "capture" effect. This has advantages for amateur work which cannot be denied, as although the present high frequencies may be wide open spaces, the same could be said of the 28 and 14 Mc. bands several years ago.

Early F.M. was used experimentally on 40 Mc. because it was considered that no reflection trouble was likely to be encountered. When police cars in Los Angeles began answering radio calls from New. York it was necessary to revise this fallacy and attempt a move to 100 Mc. or higher. This mooted move was greeted with open hostility by Dr. Armstrong and the "battle" is still in progress, somewhat halting the march forward of F.M. At this point Frank resorted to the blackboard to explain several points which naturally stops the trend of this re-write. However the above has, I hope, helped the country member to realise that the lecture was a huge success and the vote of thanks (which followed question time) proposed by 5BY was received with prolonged and enthusiastic applause. The meeting adjourned at 10.45 p.m. but it was well after 11 p.m. that the lights were turned out in an endeavour to shift the blighters. "Doc" personally pushed the last one into the street and when I left they were still going strong.

The A.O.C.P. classes opened to a full house this month. Never before have the applications come so thick and fast, resulting in the classes being 100% overfilled. Most pleased man of all was "Doc" Barbier (5MD) who fought the Council almost lone handed when a move was suggested to the School of Mines, thus possibly losing an obvious recruiting ground for the Institute. He is wearing that look of the cat who swallowed the canary these days and almost exudes "I told you so."

The official W.I.A. station (VK5WI) operating on 7 Mc. each Sunday at 10 a.m. and 3.5 Mc. each Sunday at 7.30 p.m., is doing a real good job and full credit must go to R. G. Harris (VK5RR) and second op., Joe McAllister, for an extra good job.

Two new junior ops reported this month. Geoffrey Ross Harris aged 5½ weeks whose Pop is 5FL, and Roslyn Jean McLean aged 3½ weeks and the proud Pop is 5ME. Both fathers are doing as well as can be expected!

Brian Palk (5FQ) must be putting in a good signal into W on 14 Mc. W4TM called CQ the other evening at 1800 and I personally counted 27 stations from all States in VK calling him, but he went back to Brian, saying that 5FQ was the best of all the stations calling him.

Regarding my paragraph last month re 5RT and the super regens, Bob tells me that he did not say anything against super regens as he uses one himself. What about it now Mr. Anonymous.

5BG and his offsider 5AM (from Murray Bridge) were in attendance at the meeting. Shows the enthusiasm, coming all the way from Murray Bridge.

We secured some nice publicity in "Radio Call" this month when 5GF and 5LW figured in a record making contact on 166 Mc. Mount Lofty Summit to the Hummocks was the distance, approximately 72 miles.

Two matters of interest considered by Council this month were that of increased seating capacity for the general meetings, and the purchase of some form of recording apparatus, preferably a ribbon recorder, with a view to recording lectures, matters of interest, etc., for re-broadcasting to country members over the official W.I.A. station (VK5WI) on Sundays.

WESTERN AUSTRALIA

Hon. Secretary: W. E. Coxon, VK6AG, Howard St., Perth, W.A.
Meeting Place: Builders' Exchange, St. George's Terrace, Perth.
Meeting Night: Second Monday in each month.

As the July meeting fell later in the month, notes from this meeting were too late for this issue, but will appear in the September copy.

A very successful 7 Mc. "QSO Day" was held on the 29th June. The competition opened at 10 a.m. and from then on until 5 p.m. the 7 Mc. band was like 14 Mc., a real QRM band. Approximately forty-five VK6 stations appeared and as some were only operating for a short period the competition was keen.

The day was a preliminary try out for a 7 Mc. field day to be held in September when portable stations will be able to gain extra points. The weather will be right for a good outing so everyone that can possibly get some portable gear together is asked to make the day a success.

PERSONALITIES

6MU was heard on 7 Mc. during "QSO Day" with his FS6 transceiver mobile. A good job Malcolm. —...— 6MW is doing some fine DX with that long wire antenna, even during the present poor conditions. —...— 6GM made his official debut on the 29th with a f.b. sig on 7 Mc. George was using a small portable ex-Army type transceiver. —...— 6AG also heard making a hole in the ether on the "QSO Day." It is pleasing to hear so many of the old calls coming back on the air again. —...— 6RU is temporarily in retirement. Bad luck that the 80 m.p.h. gale blew the rotary beam down Jim, however, is building bigger and better beams so will soon be back again. —...— 6FL another sufferer from the gales. Frank, however, can be heard using another antenna and still working them. —...— 6KW still heard regularly, but with conditions so poor Ron doesn't spend the time on the air that he used to. —...— 6DF had a bad sinking feeling within the abdomen when he came home to see his 50 ft. tower lifting inches out of the ground. Maurie was seen frantically guying and shovelling for many hours. The result is "the tower still stands."

6SA not heard so regularly these days. The Government must be working poor old Jim too hard. —...— 6BC appears on the 14 Mc. band occasionally but finds time to use the new rig in between his numerous other interests. —...— 6LW not heard on very much lately. Maybe Wally is building an f.m. rig now this type of emission is permitted? —...— 6WH is a stalwart on 7 Mc. What about 14 and 28 Mc. Ted? They are still there you know. —...— 6WT has some f.b. phone now and is looking for his VK3 friends to have a real chin wag. —...— 6TW just returned from a "flying" trip to the East. Bill shifting QTH and hasn't been heard much lately. —...— 6HM a quiet man lately. We wonder what Charlie is cooking up? —...— 6DD temporarily "off the air;" also shifting QTH. We believe from one room to another; if he can find one! —...— 6GB was tempted from the higher frequencies around 50 Mc. into the 7 Mc. band on the 29th. —...— 6WS another "cat walk" builder. Skipper finds lowering towers to the ground every time an adjustment is to be made is "not so easy."

TASMANIA

Secretary: J. Brown, VK7BJ 12 Thirza Street, New Town. 'Phone W 1328.
Meeting. Place:. Photographic Society's Rooms, 163 Liverpool Street, Hobart.
Meeting Night: First Wednesday of each month.

This month's meeting was notable for a lecture given by Charlie Oldham (7XA) based on ionospheric research, an interesting follow-on after the visit made by members to the station at Cambridge.

Not less welcome was his announcement that a total of £35 has been reached by the Division's Food for Britain Fund, only recently established. Acting on a letter received from the R.S.G.B., it has been decided to concentrate mainly on the shipment of fat, to which end satisfactory arrangements have been made with local tradespeople. Charlie's work in adding our drop to a worthy bucket is much appreciated.

With an eye to the changes through which the old hobby may yet have to pass, and the fact that the public still as no reason to believe that a Radio Amateur is anything but a struggling soprano sponsored by Somebody's Soap, it is hoped that a member of Federal Parliament may shortly be conducted around some representative shacks. Just to sort of brighten up, the boys might well get in some practice on commercial programme accents in order to provide him with some "trans-Pacific" contacts—DX may be poor that day!

It's inconsiderate and all that, helping to swell the QRM, but the Hobart Technical College has for some time now been running A.O.C.P. classes, with Terry Connor (7CT) at the blackboard. Four new Hams have resulted so far and more are in the offering. And they are all in the W.I.A.

The bi-monthly 7WI broadcast and intra-state ragchew on 7 Mc. have been making heavy weather of it lately, due to long skip on that band at night. 3.5 Mc. phone raises the BCL bogey for many of us, so Sunday mornings on 7 Mc. are becoming more popular as an alternative. These ragchews, as mentioned before, fill a need which is peculiar to VK7. Most know each other personally, but seldom click on a random QSO owing to the variable conditions encountered; and numbers are still small enough to keep a state-wide QSO from becoming too cumbersome. Or are they?

7AB, 7XL and families, together with 7BQ and occasionally 7DS are putting fine signals at present into Hobart from the north-west and north. 50 Mc. is receiving plenty of attention from 7XL and 7AB, and, judging from other building going on, we may even see some north-south contacts on this band before long.

Eighty's oldest inhabitant, 7AG, is

still raising the echoes around Gretna and doing all right with ZLs on phone. One can hear an occasional European on 3.5 Mc. in the mornings, but from all accounts the Kiwis have it all sewn up—W.A.C. between them during the past year.

Our wild weather, with attendant floods, brought memories to Hams in two places recently. To 7CW who, with a Launceston station, established an emergency traffic link handling thousands of words for the Post Office when, during a similar period in 1929, all line communications with the northern city were severed for some days. And to the northern gang, memories of home and mother while stuck in the mud somewhere out along the road on their way home from last month's annual dinner.

NORTHERN ZONE

As these are the first northern district notes to be written post-war I will first of all explain the set up now functioning in the north of the Island. Most of the stations in Tasmania are, broadly speaking, grouped into three localities, namely southern, northern and the north west coast. It is now considered advisable to in future publish the activities of the northern members separately so as to more fully cover the activity of these members.

Active amateurs in this area at present are 7BQ, 7RK, 7DS, 7GD and 7LZ, whilst Mr. P. Crawford ably fills the position of second op. at 7BQ. In the north west sector 7AB, 7XL and 7LT appear to be the most active. Although meetings are not being held as yet in this area all members are friendly and co-operate to a degree that promises well for the future of amateur radio and with several prospective Hams in our midst the future looks better than ever before.

A party consisting of 7BQ, 7GD, 7RK, 7LZ and Mr. P. Crawford travelled to Hobart for the annual meeting of the Institute. We were entertained in a manner far beyond anything we thought possible, an itinerary having been arranged that showed us everything in wireless, both amateur and professional that was to be seen—even if it wasn't supposed to be seen.

7BQ and 7LZ were extremely interested in the 50Mc. gear at 7CW and 7NC's. It looked so easy down there too. We know better now; believe 7AB has similar views on this subject.

7BQ is busy getting a 50 Mc. rig on the air. Also does a lot of listening and is often heard on 7 Mc. The 28 Mc. band is also occasionally used with the help of a three element rotary. —...— 7DS is having trouble with an 807 in his 14 Mc. rig. Complains that DX isn't what it used to be. —...— 7GD on 7 Mc. with a converted Army job on low power. —...— 7RK uses c.w. on 14 Mc. and has worked quite a bit of good DX lately. If you don't believe me ask his wife. —...— 7LZ at present building a 50 Mc. rig, also active on 14 and 28 Mc. using both phone and c.w. —...— Have not heard from 7AB and 7XL lately, however understand that both are putting in a lot of time with 50 Mc. gear. Tasmania should be extremely well represented on this band in the near future.

DX during June and early July has been very patchy and the few good stations heard were being eagerly sought after by the multitudes from W land.

Constant listening on 14 Mc. lately has given the impression that the latest American idea, as used by the less responsible members of the fraternity, is to use a T7 note—with or without chirps. Coming on top of the bad use of the v.f.o., this just about puts the lid on things.

* * * *

With respect to the donation of £2/2/- which the South Australian Division made available to the Broken Hill Boys' Club, to assist them in their radio work, a splendid letter of appreciation was received from the Superintendent, Rev. Guthberlet. What about it you other Divisions, two guineas will not send you broke!

W.I.A. 1914 International DX Contest

(Continued from page 8)

ing CQ or TEST. Verification of reception must be made in accordance with the conditions in Rule 3 above.

6. VK receiving stations cannot log any VK stations—only overseas stations. Overseas stations will enter up VK stations heard only.

7. The awards for the receiving contest will be similar for the winners in the transmitting tests.

8. Receiving logs are to be similar to transmitting logs.

FIFTY AND UP

OPEN AGAIN

The 50 Mc. band opened again on Sunday, 6th July. VK4SN, 4HA, 4RT and 4KK were heard in VK3, while VK3HT, 3ZL, 3BD, 3DM, 3X?, 3BN and a station 10 miles from Geelong, were heard in VK4. VK4SN, of Tambourine, worked VK3HT, near Melbourne, while VK4KK, at Millmerran, worked 3ZL at Ballarat. There is good reason to believe the band was also open for longer DX—eastwards.

On 24th June, J9ACS worked 400 miles to J2AAO in Tokyo on 50 Mc. for a 4 hour contact and on the same night 50 Mc. opened in ZL from 1800 to 2000, ZL2 working ZL3s.

VK3ZL, in Ballarat, worked 3HK, at Mitcham, on 19th July at 2115-2215. Signals were R4 S3 at start, rising to R5 S5. This is the first time a Ballarat station in the Ballarat "bowl" has ever worked a Melbourne station on 50 Mc. The distance was 77 miles, and definitely not line of sight.

NEW SOUTH WALES

Interest in the V.H.F. section continues to grow. At the meeting held on Friday, 11th July, an extremely interesting lecture was given by Mr. T. W. Kinsella (2FK) who took as his subject "The Conversion of Disposals A.S.V. Equipment for 166 Mc. Operation." The enthusiasm of these chaps is amazing, Mr. Bill Hill (2XT) for instance, came from Kurri Kurri, well over one hundred miles, to attend the meeting.

VICTORIA

V.H.F. Group meeting was held as usual on 2nd Wednesday in month. Good attendance of both 50 Mc. and 166 Mc. Hams as well as visitors. It was decided that field days in future be held every two months on the Sunday following the main general W.I.A. meeting. The next Field Day is to be held on 7th September, and at the next V.H.F. meeting proposed locations, etc., will be discussed. Publicity through W.I.A. channels to all VK States, ZLs, and Ws.

That at next V.H.F. meeting main topic to be "V.H.F. Antennas" including a lecture on Ground Plane Antennas." Colin, 3ACM, to be Chairman.

166 Mc.—General interest and discussion about gear. Main problem was grid drive, and lack of suitable tubes for 166 Mc. final. 3LS displayed his 166 Mc. Ground Plane Aerial and explained the construction and operation.

VK3ANW was present and made a very handsome offer of V.H.F. tubes for the best local DX worked while he is over in England. Ken, who was wished "bon voyage" and a safe return by all, said "Au Revoir" and shook hands all round. He will be away for 18 months.

Field Day Notes.—Weather was poor, the boys up on high places did a freeze in the fog, rain, snow, etc. The only station to do the writer the courtesy of sending in a report was 3LS who was with 3MN and 3AKI at Arthur's Seat and only worked on 166 Mc. The best contact of day was 3LS and 3YS, 73 miles airline. The gear at 3LS was tx: two CV6 tubes linear line p.p. 7 watts and 6V6 mod.; rx: 958 and 1Q5 audio, while the antenna was a ground plane 12 feet high.

3XA went to Macrae, near Dromana. The 50 Mc. gear consisted of 6AK5, 6AK5, 6C4 into AMR200. Tx EF50 c.o., EF50, 832, 20 watts input. The 166 Mc. gear was a 6 stage Tx: 6V6 c.o., 6U6, 7C5, CV6, 832 with 25 watts input. Rx: 6C4 super regen.-audio worked on 166 Mc. Everything went wrong even soldering iron blew out.

3YS and 3ABA at Macedon worked on 50 and 166 Mc. Tx: 6V6 c.o., 6V6, 6V6, 832 final for 50 Mc. with 3 watts input. The 832 was used as tripler with ¼ watt out on 166 Mc. Rx for 50 Mc. was 1852 converter, while for 166 Mc. a 9002 and two audio did the job.

3MJ and 3ANW went to Mt. Donna Buang. 3MJ on 50 Mc. used a modified Type 3, 6V6 c.o. and 807, 20 watts and cathode mod. Rx was 6AK5 mixer and 6C4 into Type 3, antenna was a doublet. 3ANW on 166 Mc. used a CV6, m.o. into 832 p.a. with 8 watts input, mod.: 6C6, 6C6, 6A6 class B and xtal mike. The antenna was a vertical co-ax dipole 16 feet high. Rx: 9 tube super. Best DX was 3YS at Mt. Macedon, 64 miles. Signals were S9 to S7.

3HK and 3YJ at Mt. Dandenong used 3HK's c.c. portable on 50 Mc. and a super regen on 166 Mc. The 50 Mc. rig was 6V6 c.o., 6V6 into 807, 7 watts, and 79 mod. Rx: 6AK5, 6AK5, 6C4 into FS6 Rx.

3IV, 3YT and 3SE were at Mt. Buninyong near Ballarat. No details to hand except that 3SE worked 3HK.

Best 50 Mc. contact was 3HK at Dandenong to Ballarat City, 3ZL. First time this has ever been done. Best 166 Mc. was 3LS at Arthur's Seat to 3YS at Macedon, 73 miles.

QUEENSLAND FIELD DAY

VK4SN took his DR106 set up to the mountains near Tambourine (50 miles from Brisbane) on 6th July where he worked all locals and 3HT and 3ZL. This was his first appearance on 50 Mc.

On 22nd June, all the locals were out hunting down 4ES's hidden transmitter.

SOUTH AUSTRALIAN RECORD

On 166 Mc. VK5NG on Mt. Lofty worked VK5GF at the Hummocks 70 miles away, line of sight. This contact took place on 25th June. Rigs used were mod. osc. and super regens. 5NG used 32" matched imped. dipole, tapped 3" off centre and 4 watts input. 5GF used ½ wave doublet. 5NG wore three overcoats and still shivered.

WESTERN AUSTRALIA

VK6SA and 6LW provide the portable activities on 50 Mc. 6SA takes his portable on the boat during week-end fishing trips to Rottnest and Rockingham, while 6LW visits higher points within car distance of Perth. Best distance was 73 miles portable to fixed location. 6SA expects to go to Rottnest West and 6LW to Northam for new DX.

PERSONALITIES AROUND THE STATES

No notes from N.S.W. Poor show, all busy working DX?

3NW, referring to the field day, says that on 166 Mc. the first hour produced a solid mass of stations which showed clearly the need for stabilised transmitters and more selective receivers. In fact QRM was a trouble all the afternoon although we had four megacycles to use. The extremely low power used by many of the stations gave surprisingly good signals.

DR106s are popular. VK4CT, 4HA, 4RT, 4KK, 4SN, 4ES and 4XG all use them. Fitting xtals to transmitter helps stability. Disposal ground plane antennas are used by 4KB, 4ZU, 4FB, 4RT and 4HB. "QST" for May gives good dope on ground planes.

5GB and 5JD have proved that crosstown QSOs on low power are 100% OK on 166 Mc. and suggest that V.H.F. should be used to reduce congestion on lower frequencies. 5GB is trying out parabolic 166 Mc. reflector.

Those trying out receivers etc. on 50 Mc. in VK6 should listen between 8 and 8.15 p.m. If you don't hear anything its time to check receiver. Country boys—call us on 7 Mc. on Sunday—pleased to help you.

No notes to hand from VK7. Believe 7XL is still busy drying out his wax. 7AB has new xtal. 7BQ uses 6L6 trip. to 807 doubler to 807 buffer to 807 final.

A VARIABLE FREQUENCY OSCILLATOR

(Continued from Page 6)

stability of the note. The sockets used were of a type which had a large area of the contacts near the shield cover, and were therefore forming a capacity to ground, particularly at the oscillator grid pin. Changing the type of sockets cured this trouble, so take particular care that the oscillator and isolator have the best quality Ceramic sockets.

For those Amateurs who prefer to operate the oscillator on 160 metres, the coil data is as follows:—

27½ turns of 30 s.w.g. on a ⅞" diameter former, threaded 24 turns per inch. The cathode tap is determined experimentally, but will be about 8 turns from the cold end, and the crystal resonator tap will be 1 turn from the ground end. The fixed capacity is made up of 700 pfd. of Simplex mica, and 100 pfd. N750 Ducon Ceramicon. The value of the Ceramicon was found to give correct temperature compensation in this oscillator.

Do not try and wind the coils without the former being threaded, because it will be impossible to make a satisfactory coil. If you do not possess a lathe, or know of a friend who has one, the local garage man will oblige for a few pence.

Telegraph Manipulating Key Design

In a paper by H. J. H. Wassell in "The Marconi Review," for July-September, 1946, on the above subject, general consideration was given to problems of hand keying, together with some detailed observations of keying methods.

The factors which influence good keying are:—

(a) Transit Time.—That is time required to move from upper contact to lower contact. This should be less than one tenth of the dot time.

(b) Transverse vibrations in the bar of the key.—These may be set up "following" the moment when impact occurs at the contact and tend to confuse the operator.

(c) Natural period of oscillation as a pendulum.—This should be long in comparison to the transit time experienced at the slowest speed of sending.

(d) Placement of contacts at the centre of percussion.—This ensures that the reaction on the pivots at the moment of the impact between the contacts is a minimum.

(e) Locus of the knob.—Since in keying the movement of the hand tends to be in a circular arc centred on the wrist or elbow, it is desirable that the locus of the knob should coincide with this arc. The nearest mechanical feasible approach to this ideal is a vertical up-and-down motion, which can be approximated by the use of a large radius from pivot to knob.

These factors lead to the following conditions, which should be met by a well-designed key:—

(i) Small mass of moving arm.
(ii) The use of a "dead" metal for the arm, so as to damp out transverse vibrations.
(iii) The use of an arm length not less than 2½", but not greater than is necessary so that transverse vibration amplitude is low.
(iv) Small gap, having regard to electrical loading.
(v) Contacts at or near centre of percussion.

Comments of Operators.—A considerable number of keys of different types were set up and adjusted by individual operators who were asked to comment on each key and state reasons for their preferences.

Most operators said they preferred a key which had a "definite" feel and disliked a key which had a "woolly" feel. This definiteness would seem to be a mixture of a desire for little or no follow through of the key once the contact has been reached, combined with an absence of spurious vibrations.

Thus from this point of view a really bad key would have a large mass with spring supported contacts. Another property which operators appreciate is that of "liveliness." This would seem to be a property given to a key by minimum mass and minimum frictional resistance. Another expression used by operators was that at high speeds "the key should send for you." By this it is thought that the operators mean that there should be no disturbing resonances which would introduce forces in opposition to those necessary to manipulate the key, and that if the force applied to the key is not truly vertical, the movement of the key should still substantially be in the right direction.

Details of a New Key Design.—Having regard to the above considerations a new key was designed. Some details of this key are as follows:—

Total weight—1 lb. 3 oz.
Mass of moving arm (less pivot bar)—2 oz.
Length between knob and pivot—3¼".
Height of knob skirt above the bench—1-1/16".

Some of the design features are outlined below:—

(1) Bearings.—Spring loaded knife bearings are used as these do not require adjustment for wear, and bearing friction is satisfactorily small. The contacts are so placed that the pressure on the bearing surface is maintained irrespective of whether the knob is pressed down or pulled up.

(2) The gap adjustment is controlled by means of a nut on the actual knob mounting. This nut is turned by moving the skirt of the knob which carries a scale on its periphery to allow rapid re-setting to a predetermined value. The skirt is locked in position by the knob itself.

(3) Knob Height and Shape.—The knob shape was chosen as a result of the preferences expressed by operators using previous keys. There was an overwhelming preference for a skirt to be fitted to the knob. The top of the knob is patterned to avoid slipping in damp climates.

(4) Click Suppression Filters.—Except for the operating knob and the tension adjusting knob, the key is completely encloesd by a streamlined casing. It has been possible to incorporate within this casing a filter which supplies the minimum amount of filtering necessary to satisfactorily suppress any spark interference.

(5) Bench Mounting.—A bottom plate is provided for the key which can be screwed down to the bench and to which the key can be fastened by a single securing screw.

SUCH NICE PEOPLE

(Continued from Page 11)

Henry, 3EN, had fire in his eye one night on 7 Mc., splashing a fair treat. Not usual for you OM, what was it, homework?

* * * *

Pretty chirpy stuff from 3NJ on 7 Mc. 2GS not quite so bad, but room for improvement.

* * * *

Those with clicks to a varying degree, but otherwise OK—3JP, 2ML, 3BP, 2VW, 3FH and 3AIR. While on clicks, the Type 3 Mk. 2 is not immune. Click filter built in I know, but it's not 100% pure.

* * * *

Now the fone blokes. 3GK, a solid hum plus a splash. 3ABJ pretty rough. 2NJ, a very solid hum, one of those jobs that stops when you speak. Bit hard to talk all the time so I guess the only thing to do is clean it up. 3FW, your background music was solid at 1415 on July 6. You and the music just about broke even at times.

* * * *

Those that just splash—3AO, 7MR, 2AIK, 2ML, 3FW, 4FW, 3BU, 3ZU and 2NL.

* * * *

You've gotta be quick these days. Couple of months back I mentioned I wouldn't be surprised if the Federal President took to the air. Between the time of writing and hitting print, a new hand was holding the reins from the Federal seat. I know everyone will join with me and say how sorry we are to see you go Vaughan. Thanks for guiding us through difficult times. To the new chief, greetings. We should have no worries—nothing like an old dog for a hard road, you know!

Unofficial Q signs used by 6WH so that he does not get the OM in trouble with the XYL are: QWG (weeding garden), QWC (wood chopping), QWD (washing dishes), QMT (meal time).

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